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Wisconsin State Horticultural Society

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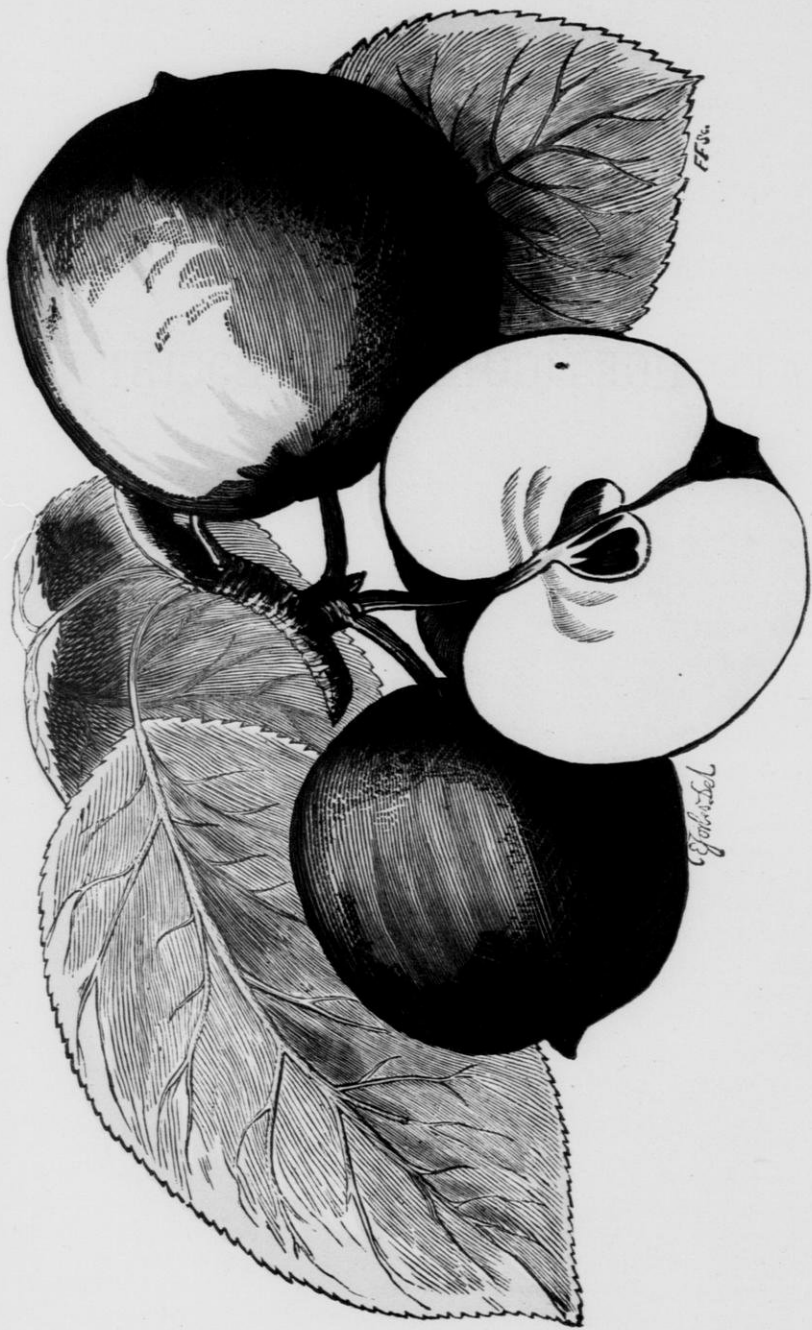
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AGRICULTURAL
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WHITNEY'S SEEDLING SIBERIAN CRAB N^o. 20.

Originated on the grounds of A. R. WHITNEY, Franklin Grove, Lee Co., Ill., 1851.

Transactions

OF THE

WISCONSIN

STATE HORTICULTURAL SOCIETY.

Proceedings, Essays, and Reports

AT THE

ANNUAL WINTER MEETING,

HELD AT MADISON, FEBRUARY 1, 2, AND 3, 1876.

COMPILED BY F. W. CASE, SECRETARY.

MADISON, WIS.:
E. B. BOLENS, STATE PRINTER.

1876.

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11th District—SAMUEL ROUNSEVILLE, - - - - - SHEBOYGAN FALLS.

12th District—J. M. SMITH, - - - - - GREEN BAY.

Preface.

This, the sixth annual volume of the Wisconsin State Horticultural Society, is given to the public with the earnest hope that all who are interested in horticulture, especially in our own State, will find its contents fully as interesting, and as useful to them in their field of labor, as those of former years. There may appear to some to be a lack of variety in the range of subjects presented, and that too much space is devoted to apple-culture; but this seemed to our members to be the "subject of the hour," and to demand special attention. The extreme severity of the winter of 1874-75 had, by the destruction it occasioned in our orchards, unsettled the faith of the public generally, and of some even of our oldest fruit-growers, in the success of fruit-culture in our State, and there was an earnest desire, on the part of those assembled at our annual meeting, to fully discuss the situation, and, if possible, to devise some remedy, some way of escape from the evils that beset us. Interesting articles will also be found on grape-culture, floriculture, cranberries, small-fruits, and ornamental foliage.

The reports of the committee of observation, from the different fruit-districts will be found an interesting and instructive feature of the volume. It is much to be regretted that want of space made it necessary to cut down the reports sent in. These reports should form a prominent part of our yearly volumes; for in no way can more light and knowledge be gained on horticulture subjects, than by a careful collection and consideration of the experience of others; and of all the facts developed by different conditions and systems of culture.

The illustrations in the volume add much to its appearance, and, we trust, to its worth. The importance of a more general knowledge of our insect friends and foes, led our Society to adopt the plan of giving an article on this subject each year, illustrating it with cuts of the insects described so that they may readily be known to all. Thanks are due to Prof. W. W. Daniells, of the State University, who kindly furnished the entomological notes of the present volume.

Cuts are given of two valuable varieties of fruit, originating in this State. The frontispiece, a colored illustration of Whitney's Seedling No. 20, is inserted through the kindness of Mr. Whitney himself, at his own expense. As the apple is excellent in quality for cooking and canning, and as the tree has proved sufficiently hardy to endure our most severe winters, having been in bearing for sixteen years, it was deemed worthy of insertion.

Obligations are due to the State Printer for printing the Transactions at the earliest moment the other demands of the State on him would permit, and for the neat and attractive manner in which he has done the work.

F. W. CASE,
Recording Secretary.

Contents.

	Page.
OFFICERS AND STANDING COMMITTEES.....	2
PREFACE.....	3
LIST OF MEMBERS.....	5
CONSTITUTION AND BY-LAWS.....	6
REPORTS OF LOCAL SOCIETIES.....	7-8
ADDRESSES AND PAPERS AT ANNUAL MEETING.....	9-130
Annual address, President A. G. Tuttle.....	9-14
Secretary's Report.....	15-23
Notes from the Orchard and Garden, J. S. Stickney.....	23-29
Up-hill side of the Apple Question, Geo. J. Kellogg.....	29-33
Trees and Foliage in Landscape, Charles S. Abbott.....	33-44
Varieties Raised with Profit, Geo. P. Peffer.....	44-49
Apple-culture in Wisconsin, G. W. Putnam.....	49-57
Floriculture, Mrs. M. M. Davis.....	57-60
Planting and Care of Orchards, A. C. Tuttle.....	60-64
Cranberry-Culture, H. Floyd.....	64-68
Siberian Apple, J. C. Plumb.....	68-72
Observations of a Novice, A. L. Hatch.....	73-76
Cultivation of the Grape, R. J. Harney.....	77-83
Horticulture in the Northwest, Dr. C. Andrews.....	83-89
Hints for Arranging Flowers, Mrs. H. M. Lewis.....	89-93
Thirty Years Experience in the Orchard, B. B. Olds.....	93-95
Our Window Plants, Mrs. I. H. Williams.....	96-98
Small-Fruits, J. M. Smith.....	99-103
Orchard Protection, H. M. Thompson.....	103-110
Codling Moth, E. G. Mygatt.....	110-113
Lessons of the Season, E. Wilcox.....	113-115
Entomological Notes, Professor W. W. Daniells.....	116-130
Apple-Worm.....	116
Canker-Worm.....	119
Cut-Worm.....	122
Round-Headed Apple-Borer.....	12;
May Beetle.....	127
Beneficial Insects.....	128
TRANSACTIONS.....	131-166
Joint Convention.....	131
Fruit-District.....	132
Centennial Exhibition.....	132,145
Cranberries.....	134,143
Treasurer's Report.....	135
Plums.....	136
Location of Society Meetings.....	138,161
Election of Officers.....	139
Small-Fruit Culture.....	140
Double-worked Stock.....	140
Pruning.....	141
Fruit in Northern Wisconsin.....	145
Hybridizing.....	146
Grape-culture.....	146
Solar hot-bed.....	149
Cultivation of flowers.....	154
Fruit on exhibition.....	159
Fruit-lists.....	160
Strawberries.....	161
Evergreens.....	163
Fruit-districts.....	164
Nomenclature.....	165
PREMIUMS AWARDED.....	167-173
CLARK'S ORANGE.....	170-172
REPORTS OF COMMITTEES.....	175-200
Report of Horticulture at State Fair.....	175
Report of Pomological Exhibition.....	177
Yield of Strawberries, B. F. Adams, Philip Cheek, J. M. Smith.....	179-181
REPORTS OF COMMITTEES OF OBSERVATION.....	184-200

List of Members.

- Adams, B. F. Madison.
 Allen, Prof. W. F. . . . Madison.
 Anderson, Matt. Pine Bluff.
- Benton, E. H. Le Roy.
 Bliss, H. G. Madison.
- Case, F. W. Madison.
 Cheek, Philip Baraboo.
 Chipman, A. Sun Prairie.
 Clark, J. T. Prairie du Sac.
- Daniells, Prof. W. W. Madison.
 Daniels, E. W. Auroraville.
 Davis, J. J. Mifflin.
- Emerson, M. E. Door Creek.
 Emmons, J. W. Magnolia.
 Evans, Rev. Rees. . . . Cambria.
- Finlayson, Wm. Mazomanie.
 Fisher, W. O. Waunakee.
 Foote, John. Lodi.
 Fratt, N. F. Racine.
- Goss, B. F. Pewaukee.
 Graves, S. W. Rutland.
 Greenman, C. H. Milton.
- Hatch, A. L. Ithaca.
 Hawes, J. T. Madison.
 Hirschinger, Chas. . . . Baraboo.
 Holt, M. A. Madison.
 Howie, John. Waunakee.
- Kellogg, Geo. J. Janesville.
 Knight, E. Sun Prairie.
- Lawrence, F. S. Janesville.
 Lund, Gen. N. F. . . . Madison.
- Mason, Geo. A. Madison.
 Mathews, B. A. Knoxville, Iowa.
 Mygatt, E. G. Richmond, Ill.
- Northrop, S. S. Madison.
- Olds, B. B. Clinton.
- Palmer, N. N. Brodhead.
 Peffer, Geo. P. Pewaukee.
 Perry, C. Beaver Dam.
 Phillips, A. J. West Salem.
 Plumb, J. C. Milton.
 Plumb, T. D. Madison.
 Putnam, G. W. Ash Ridge.
- Reid, William. North Prairie.
 Rounseville, Saml. . . . Sheboygan Falls.
- Seymour, A. N. Mazomanie.
 Smith, J. M. Green Bay.
 Southmayd, O. A. . . . Portage.
 Stanfacher, J. A. . . . Monroe.
 Steinfort, H. Lake Mills.
 Stickney, J. S. Wauwatosa.
- Thompson, H. M. . . . St. Francis.
 Tuttle, A. C. Baraboo.
 Tuttle, A. G. Baraboo.
- Whittier, C. S. Camp Douglass.
 Whitney, A. R. Franklin Grove, Ill.
 Wilcox, E. Trempealeau.
 Wood, J. W. Baraboo.

HONORARY.

- Life*—Dr. Joseph Hobbins, Ex-President, F. G. S., Corresponding Member Royal Horticultural Society, England, Madison; O. S. Willey, Ex-Recording Secretary; Benton Harbor, Michigan.
- Annual*—A. R. Whitney, Franklin Grove, Ill.; Mrs. H. M. Lewis, Madison; Mrs. I. H. Williams, Madison, Mrs. M. M. Davis, Baraboo.

Constitution and By-Laws.

Adopted at the Annual Meeting in February, 1868.

CONSTITUTION.

ARTICLE I.—This Society shall be known as the Wisconsin State Horticultural Society.

ARTICLE II.—Its object shall be the advancement of the science of Pomology and the art of Horticulture.

ARTICLE III.—Its members shall consist of *Annual* members, paying an annual fee of one dollar; of *Life* members paying a fee of ten dollars at one time, and of *Honorary* members, who shall only be members of distinguished merit in horticultural or kindred sciences, or who shall confer any particular benefit upon the society, who may by vote be invited to participate in the proceedings of the Society.

ARTICLE IV.—Its officers shall consist of a President, Vice-President, Recording Secretary, Corresponding Secretary, Treasurer and Executive Board, consisting of the foregoing officers and the ex-President, and *three* members to be elected annually; five of whom shall constitute a quorum at any of its meetings.

In addition to the foregoing officers, the Presidents of all local societies shall be deemed honorary members, and *ex-officio* Vice-Presidents of this society.

All officers shall be elected by *ballot*, and shall hold their office for *one* year thereafter, and until their successors are elected.

ARTICLE V.—The Society shall hold annual meetings, commencing on the Monday next preceding the first *Tuesday* of February, for the election of officers, for discussions, and for the exhibition of *fruits*; also, one meeting during the fall, for the exhibition of fruits and for discussions, at such time and place as the Executive Board shall designate.

ARTICLE VI.—This Constitution may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The President shall preside at meetings, and with the advice of the Secretary, call all meetings of the society, and have a general superintendence of the affairs of the society; and shall deliver an annual address, upon some subject connected with horticulture.

II. The Vice-President shall act in the absence or disability of the President, and perform the duties of the chief officer.

III. The secretaries of local societies shall; by correspondence and personal intercourse with the horticulturists of their respective districts, obtain accurate information of the condition and progress of horticulture, and report to this society.

IV. The Corresponding Secretary shall attend to all the correspondence of the society.

V. The Recording Secretary shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports.

VI. The Treasurer shall receive and keep an account of all moneys belonging to the society, and disburse the same on the written order of the President, countersigned by the Secretary, and shall make an annual report of receipts and disbursements.

VII. The Executive Board may, subject to the approval of the society, manage all its affairs, and fill vacancies in the board of officers; three of their number, as designated by the President shall constitute a finance committee,

VIII. It shall be the duty of the finance committee to settle with the Treasurer, and to examine and report upon all bills or claims against the society, which may have been presented and referred to them.

REPORTS OF LOCAL SOCIETIES.

BROWN COUNTY HORTICULTURAL SOCIETY.

This society is still in active operation, meeting frequently and laboring to advance the interests of horticulture in this section.

President—J. M. Smith, Green Bay. Secretary—W. Reynolds, Green Bay.

FREEDOM HORTICULTURAL SOCIETY.

The following are the officers of the Freedom Horticultural Society for the present year:

President—Charles Hirschinger, Baraboo. Vice-President—M. T. Nippert. Secretary—W. C. T. Newell, North Freedom. Treasurer—August Bender, Baraboo.

GRAND CHUTE HORTICULTURAL SOCIETY.

At the fourth annual meeting of the Grand Chute Horticultural Society the following persons were elected officers:

President—W. H. P. Bogan. Treasurer—L. Briggs. Secretary—D. Huntley.

The meetings held by this society have been devoted mainly to the discussion of small-fruits.

JANESVILLE HORTICULTURAL SOCIETY.

The following were elected officers of the Janesville Horticultural Society for the years 1875-6:

President—Alexander Graham. Vice-President—Geo. J. Kellogg. Secretary—E. B. Heimstreet. Treasurer—D. E. Fifield.

We have at present thirty-eight life-members. Our annual fair was held in October, 1875, at the same time with the Southern Wisconsin. The show of fruit was very fine; in the floral department the display, both in quantity and variety, far exceeded anything of the kind ever held here.

LEMONWEIR VALLEY HORTICULTURAL SOCIETY.

The Lemonweir Valley Horticultural Society held its second annual meeting at Tomah, January 18, 1876, and elected the following officers:

President—J. F. Freeman, Tomah. Vice-President—J. P. Sheldin, New Lisbon. Treasurer—C. H. Grote, Mauston. Secretary—Dr. H. Allen, Tomah. Trustees—C. W. Potter, Mauston; Mrs. E. Wescott, New Lisbon; C. W. Kellogg, Tomah.

The society has held eight meetings during the year, at which six or eight essays have been read, five set speeches delivered, and one or more discussions held at each meeting.

MADISON HORTICULTURAL SOCIETY.

The society's working force having been reduced, by circumstances beyond its control, it was deemed best to suspend active work for the time being. It is now resolved to revive the work for the present year at once.

The following officers have been elected for the year 1876:

President—William T. Leitch. Vice-Presidents—Joseph Hobbins, Edward Thompson. Corresponding Secretary—Mrs. H. M. Lewis. Recording Secretary—F. W. Case. Treasurer—Timothy Brown.

RICHLAND COUNTY HORTICULTURAL SOCIETY.

The society met at Richland Centre September 23, 1875, and elected the following officers for the coming year:

President—D. L. Downs. Vice-President—W. Dixon. Secretary—G. H. Putnam. Treasurer—John Winn.

SAUK COUNTY HORTICULTURAL SOCIETY.

The following have been elected as officers of this association.

President—S. W. Grubb, Baraboo. Vice-President—John Rooney, Freedom. Recording Secretary—J. N. Savage, Baraboo. Corresponding Secretary—Wm. Toole, Excelsior. Treasurer—D. E. Palmer, Fairfield. Executive Committee—John Dickie, Jr., H. H. Howlett, A. M. Petty, A. C. Tuttle, and C. Hirschinger.

ST. CROIX VALLEY HORTICULTURAL ASSOCIATION.

This society held its annual meeting in the village of River Falls, and elected officers for the current year, as follows:

President—S. M. Davis. Vice-President.—J. W. Winn. Recording Secretary—Osborn Strahl. Corresponding Secretary—R. J. Wilcox. Treasurer—M. D. Proctor. Executive Committee—O. C. Hicks, E. S. Whitehead, John Green.

WINNEBAGO HORTICULTURAL SOCIETY.

The officers of this society are:

President—John O'Brien. Vice-Presidents—J. R. Paddleford, Wm. M. Morgan. Treasurer—R. D. Torrey. Secretary—R. J. Harney. Corresponding Secretary—E. S. Hayden. Executive Committee—A. G. Lull, G. A. Randall, M. Whitmarsh, Isaac Miles, J. R. Paddleford.

The above officers were elected at the annual, January meeting, and R. J. Harney, chosen as delegate, to represent the association in the convention of the State Horticultural Society.

ADDRESSES AND PAPERS

BEFORE THE WISCONSIN

STATE HORTICULTURAL SOCIETY,

AT THE

Annual Meeting held in the Agricultural Rooms, Madison, February 1, 2, and 3, 1875.

ANNUAL ADDRESS BY THE PRESIDENT,

A. G. TUTTLE, BARABOO.

Gentlemen of the State Horticultural Society:

The constitution of your society makes it obligatory on the president to deliver an annual address. I am persuaded that the framers of that instrument could not have foreseen the exigencies that would arise in the history of this society, or they would have made no such provision. Occupying, by singular mistake of the society, the position of president, I attempt to perform a duty which should have been given to abler hands.

Friends of horticulture, we meet again, after the labor of another year, to exchange friendly greeting, and by bringing together our several experiences, to gather from them, if possible, something of truth, to guide us in the performance of the great work we have undertaken—that of supplying our State with a good variety of the leading fruits adapted to general cultivation.

The past year may have been, to some, one of discouragement. Yet I trust it will prove in the end to have been one of progress.

If our efforts are directed to the promotion of the great and important interests of horticulture, rather than private, selfish interests each year will show certain and satisfactory progress. The task we have undertaken may seem to some impossible of accomplishment, and very many are even now predicting certain failure; but what great work ever undertaken, has been carried forward to completion without opposition of this kind? The faint-hearted and irresolute may give up in despair, yet we know this, that the Almighty never designed our fair State—unsurpassed by any other in fertility of soil and beauty of scenery—to remain barren of luscious fruits; and we know, too, that He often makes use of human instrumentalities for the accomplishment of His purposes. There may be many and great discouragements, yet each new triumph adds to our faith in ultimate success. There are many truths well established now, where all was doubt and conjecture a quarter of a century ago. We have attained a better knowledge of what is necessary to insure success in the various branches of horticulture than we once had.

In the orchard, the dead and dying trees stand as monuments of our ignorance of the proper varieties to plant, or of the proper soil and location upon which to plant them. Our State extends over a large area in which modifying conditions of soil and climate determine, in a great measure, our success or failure. Along the lake shore fruits can be grown that cannot be grown in the interior, and in the interior, many do well which fail entirely in the northern portions of the State. Then again the soil has much to do with our success or failure. The low, level, rich land of the timbered valleys and the prairies, or lands quite sandy, are unadapted to many kinds of fruit that do admirably upon the clay ridges or high rolling timbered land. In fact, very good locations for fruit and very poor ones often lie side by side. The proper selection of a site for an orchard is of the first importance. It may be desirable to have it located as near the dwellings as possible, yet the best soil and location should be selected, no matter upon what part of the farm it may be situated.

There are very many portions of our State where the apple can be grown with certainty, bringing much larger returns of profit than any other farm-crop. What we need most now is such varieties as are adapted to localities where failures have been general, where

the extremes of climate, in connection with an unfavorable soil and location, have made fruit-growing unprofitable. In such districts crab-apples are being extensively planted, and many of them will prove of value, but never can supply the place of the common apple; to supply this want, the earnest efforts of the horticulturist should now be directed. It may be supplied by new seedlings grown upon our own soil, or by the introduction of fruits from countries where the climate is similar to our own.

I have strong faith in the new Russian varieties of apples lately introduced, and that out of the several hundred varieties now being grown here we shall find a few, at least, that will prove of great value, such as we can recommend as "iron clad," and that will not prove a failure the first severe winter.

The object of this society is to bring together fruit-growers from different parts of the State, so that from their aggregate experience we may be able to give such advice to planters as shall enable them to plant intelligently and with a reasonable hope of success and profit. Great care should be taken that we do not mislead; no consideration of a private nature should be suffered to weigh against that of public good. The recommendations of our society have not always proved reliable, and one of the reasons why they have not, is the vast difference in different locations and soils in adaptation for fruit-growing even in the same locality, and large quantities of trees are being planted every year upon places where they are sure to prove a failure. Our list already recommended may do well, and be all that is needed for the best fruit locations, but I think a separate one should be made for such places as require hardier varieties, and coupled with each list a description of the proper place, soil, etc., on which they should be planted. This may seem to some unnecessary, but the mass of the people are wilfully ignorant upon the subject of fruit-growing, and every thing should be made so plain that "the way faring man, though a fool, need not err therein." Our list for unfavorable places may be very small, embracing perhaps only one variety beside the crabs, but if so, let it be confined to that, and let us add to it only as we become satisfied that we have those that will prove worthy.

It will require more skill and care than the average planter will bestow upon it to make some branches of fruit-growing a success upon the mucky soil of the valleys and low plains, or upon light sandy soil.

There are many obstacles to be contended with which lie in the way of successful fruit-growing here. Yet not all the losses and failures are confined to this State. Throughout the entire northern States we hear of orchards and nurseries partially destroyed or injured, so that even in many of the old fruit-growing States they feel the want of hardier varieties. I have full faith in fruit-growing as a business in Wisconsin, and that any man with ordinary intelligence upon the subject, can engage in the growing of fruit as a business, and obtain much surer and larger returns for his labor and money invested than from any other farm crop. My faith is built upon nearly a quarter of a century's experience in fruit-growing in this State, and I would much rather have ten acres of land, suitable for the purpose, in apples of the right varieties, well into bearing, than a quarter section of good land for ordinary farming purposes. Last season was one of comparative failure in the apple crop, and yet nothing paid me so well. I gathered from twenty-five trees, occupying one-half acre of land, one hundred and twenty barrels of fruit, and those same twenty-five trees have paid nearly \$10 per tree for twelve or fifteen years. An orchard of ten acres of such trees, all can readily see, would bring a large annual income, for even half that amount per tree would far exceed in value any other farm crop. It is astonishing how slow the ordinary farmer is to learn the value of a good commercial orchard. It requires culture and care, but the labor expended annually, in proportion to the income, is very small compared with other farm crops. Trees are planted carelessly and left to take care of themselves; any kind of crop is put in the orchard without regard to its effect upon them. Many farmers seem to have set a few trees without faith that that they will ever prove of any value, and they grudgingly give them the space they occupy. Very few even, with the best of locations on which to plant, ever think of growing fruit as a business, while a good commercial orchard of ten or twenty acres, upon any farm adapted to the culture of fruit, would add ten-fold to its annual production, and an equal amount to the value of the farm. It is all very well, they think, for the people on the other side of Lake Michigan to make fruit-growing a business, but here it is far better to grow wheat, when it can be demonstrated that the profits of the orchard are fifty times greater than the growing of wheat.

There are large sections of our State where the apple can be grown with as much certainty and profit as in any part of Michigan, and it is our fault if we do not grow enough, at least, for home consumption. There are thousands of acres of land in our State lying idle and unproductive, where the apple can be grown with as much certainty of success as any place on earth. I believe it is equally true that there are other portions where failures have been general, and will continue to be, until we find a hardier class of fruits, adapted to such localities. When we come to understand that we cannot grow "figs of thistles," and that upon a soil unadapted to the growth of any particular product we shall meet with certain failure, we will expend our efforts in the growth of such products as are adapted to the soil; then our success will be certain.

The show of fruit at our State Fair was remarkably good; all the space in the large hall being fully occupied. Owing to the fair being held earlier than usual, much of the fruit was not fully matured. For the best display of fruit and agricultural products, the fair was too early. I should hope that we might go back to former usage, if it would not seriously incommode the horse-trotting department. Our show at Chicago was very good, but not what it might have been a little later in the season. A full report of our exhibition will be made by the chairman of your committee.

Special efforts should be made to induce people to plant evergreens and other trees for shelter, especially upon the prairies. The first duty of the farmer upon the prairie is to plant trees for shelter. The proper planting and arrangement of evergreens will enable them to grow fruit more successfully. An eastern hillside on the prairie, with the summit crowned with evergreens, may be made very good for fruit. There is no farm where the judicious planting of from \$20 to \$50 worth of small evergreens will not, in a few years, add to the value of the farm ten times their cost. The low price at which they are now offered brings them in reach of all.

The past season was unfavorable for the grape; a large crop was set, but the season being cold and wet, it did not mature perfectly. Such was the case in some of the best grape-growing sections of the northern states. In Ohio, along the lake shore, there was a partial failure from the same cause.

The cranberry promised an unusually large crop. A very heavy

frost occurring in August, destroyed the largest portion of it; still thousands of barrels were gathered and shipped abroad. The cranberry interest is a prominent, growing interest in our State. Probably no State in the Union has as large an area of valuable cranberry-lands as Wisconsin, and none more susceptible of improvement with as little cost. The day is not far in the future when the cranberry-crop will nearly equal in value any crop grown in our State. Papers have been promised by growers, which will bring this interest before you, and I trust it will receive such attention and elicit such discussion as its importance demands.

I would suggest the propriety of making a show of the fruits of Wisconsin at the Centennial Exhibition the present year, at Philadelphia. Our fruits can be placed on exhibition at the proper season, and a show may be made far excelling that made by us at Chicago. In order to make the best show possible, competent persons should be employed, in different parts of the State, to make collections, and only those appointed who will do the work; for upon the thoroughness with which this duty is performed, depends the success of the exhibition.

Members of the State Horticultural Society, we have been wont to meet together, at these our annual gatherings, for many years, to recount our trials, our disappointments, and our successes, and from time to time to strengthen that bond of union, cemented by a common interest in a common cause. Let us not forget that our deliberations may greatly advance the cause for which we labor, or retard its progress in the State. Let us put aside all selfish considerations, and labor for the general good, that our deliberations may result in giving safe and sure directions to those who would beautify their homes and add value to them, by the planting of flowers and trees, for fruit, for ornament, and shade. Such an object is worthy of our best efforts, and will pay, if not in dollars, in the consciousness that we have lived and labored, not for selfish ends, but for the general good.

SECRETARY'S REPORT.

F. W. CASE, MADISON.

Gentlemen of the State Horticultural Society:

When last we gathered here, arctic storms were sweeping over the country, causing many fears lest the horticultural interests of our State would be wrecked by their polar waves. The extreme severity of the winter left little or no ground to hope for a crop of fruit the coming season, and most of us felt that when spring came, we should witness another wholesale destruction of our trees; but the storms have passed away and we can not only say "that we still live," horticulturally, but that we have taken a new lease of life, and have fresh courage to contend with the difficulties that surround us, for we are inspired with the belief that we have now touched bottom, and know where we stand; what we shall have to meet, and what we have, on which we can depend.

Many trees were killed or injured, and in some locations even the Iron Clads were found wanting in hardiness, but in the majority of our orchards, they came through unharmed and in some instances yielded fair crops of fruit. Other varieties, generally regarded as too tender to be recommended for cultivation in our climate, withstood the rigors of the hard winter and bore fruit. In spite of the very unfavorable circumstances attending its growth, the longest, hardest winter we have ever known, a very backward spring, followed by a cold season, with frost in nearly every one of the summer months, our fruit, with the exception of grapes, came to full maturity, and though generally sparing in quantity, was of more than the average quality. The display of fruit made by the society at the Pomological Exhibition, and those at our State and local fairs, far exceeded the most sanguine expectations; in fact, in some respects, they surpassed those of former years when fruit was abundant. Under these circumstances why should we be disheartened?

LESSONS OF THE YEAR.—Each season has some additional light and knowledge to impart to the careful observer, and it is often the

case that our times of trial, our failures and losses are the most fruitful sources of instruction and profit, if improved aright. It is by giving heed to these lessons of experience that we shall become able, if ever, to attain to complete success. There is little need to speak to you in regard to the lessons of the past season, as you all are, doubtless, more familiar with the subject than myself, but in order to call your attention more fully to it I will mention one or two of the most noticeable facts, a due consideration of which may give light to guide us in the future.

The experience of the past season seems to prove more conclusively that hardiness, with us, is only a relative term, being modified by local circumstances and conditions. In some orchards we have seen our Iron Clads killed outright, in others, varieties classed as tender and unreliable, that have come out of the arctic furnace entirely unharmed. In view of this fact, would it not be well for the society, if it is to recommend certain varieties for general cultivation as hardy, and others as sufficiently so for particular localities, to make, in a condensed form, a statement of the most important circumstances and conditions, as to soil, exposure, protection, mode of cultivation etc., which apply to and should accompany each list? These facts have been repeatedly given in addresses, papers, and discussions at our meetings, but would they not be brought more prominently before the public and result in much good if presented in a condensed form, as a system of rules to be observed, conditions to be complied with to give a reasonable hope of success? It has been stated as an objection to this, that it is impossible to make rules, or prescribe conditions that will apply to all cases, but does not the same objection hold good, even with greater force in regard to recommending a list of varieties at all?

Again, we see from this season's experience that loss of fruit cannot be attributed to severe cold alone. Had the general opinion in regard to the degree of cold our fruit-buds can endure been correct, not a fruit-bud in the whole State would have escaped destruction. There is undoubtedly a limit to their power of endurance, but it is much greater than has been generally supposed, other conditions being favorable. And here is a question that it will be for our interest to consider. What are these conditions? Why is it that some orchards have borne good crops of fruit, while others, perhaps in the same locality, have yielded little or none? Why is

it that, in some places, pear and plum trees have been fruitful and in others barren, if not destroyed root and branch? Is it due to some local protection, or modifying influence, or is it the result of the physical condition of the trees themselves, produced by the character of the soil, manner of growth, mode of culture, etc? I am inclined to believe that in many instances it is the latter. It is with our trees as with the human constitution in a malarious and sickly climate; if the vital energies, the tone of the system, are kept in good condition, we are strong to endure and repel the shafts of disease, but let there be any undue excitement or development, any relaxation or weakening of the system and we fall an easy prey to the destroyer. The investigations of our committee of observation may give us some light on these points.

REPORTS OF FRUIT-DISTRICTS.—Reports will be presented from most of the fruit-districts into which the State was divided at our last meeting. The great benefit which would result to the cause of horticulture from the faithful and thorough performance of the labor assigned to this committee of observation, should lead us to consider in what way its efficiency can best be promoted, and the desired results be obtained. Some of the districts seem too large to admit of the proper discharge of the duties devolving on the observer, without its becoming an unwarranted tax upon his time and pocket. Quite a large number of applications have been made to me during the year, for facts and statistics relating to horticulture in this State, to which it was impossible to reply for the want of means to obtain the desired information. This has suggested the query whether it would not be possible by extending our plan of districts, or by local and county horticultural and agricultural societies, or both, to collect full reports on all matters relating to horticulture.

CENTENNIAL EXHIBITION.—The question of the creditable representation of the horticultural productions of our State at the Centennial Exhibition is an important one, and one in which we all feel a great interest; some action should be taken with reference to it. It seems important that the selecting, arrangement, and in part at least, the exhibition of the articles should be under the supervision of this society, rather than of private individuals or the general State board of commissioners. The state of our finances will not warrant our incurring much expense for this purpose, but the bill introduced in the legislature appropriating \$25,000, to se-

cure a worthy representation of our State and its resources will doubtless pass, and if the wishes of the society are made known to the State Centennial Board, they will doubtless grant the needed aid.

FINANCES.—I would call your attention to the financial condition of the society. The funds in our treasury are diminishing from year to year, and unless some measures are taken to prevent, we shall soon become bankrupt. The only present sources of revenue we have are the membership-fees, and the small amount that remains each year from unawarded premiums; and by our efforts to draw out full exhibitions at the fairs, and our want of effort to increase our membership, we are lessening the amount thus received. In view of the condition of our treasury and the increased rates of postage, would it not be advisable, in distributing our Transactions through the mail, to send them at the expense of the members, rather than of the society?

MEMBERSHIP.—The list of our members is very small; so small, in fact, as to make it a question of policy whether it had not better be left out of our printed volume. It certainly is not creditable to the society or the people of our State. Cannot we, as members, remedy this by personally soliciting our acquaintances and friends who are interested in horticulture to join with us? If each one would regard this as a part of his duty to the society, our numbers would be largely increased.

LOCATION OF ANNUAL MEETING.—Early in the season, an invitation was sent to the society to hold its present annual meeting at Tomah, as the guest of the Lemonwier Valley Horticultural Society. On conferring with President Tuttle, it was thought best to ascertain by correspondence the opinion of the executive board and other members of the society, with reference to accepting this invitation. Letters were accordingly sent; a few stated they were in favor of calling the meeting at Tomah, but the majority were averse to any change at present; and, inasmuch as there is no authority given by the constitution to the executive board to determine the place of holding the annual meeting, and no precedent allowing the president to call it at other than the usual place, unless so instructed by the society, it was deemed advisable to meet here as usual, and refer the question of holding our future meetings in different parts of the state to the society for decision. There are some reasons why it would be preferable to have a fixed location,

a home, where the society can hold its annual meetings; but as long as these meetings are the only ones held for public addresses and discussions, the public good, as well as the prosperity of the society, seems to demand that they should be held in different parts of the State, where the good resulting from them may be enjoyed by the largest number. And let me ask, is it not time for the society to take a new departure in this respect, and by an extension of its field of labor, to increase its influence?

It has been repeatedly said, that as now composed, "the society is almost wholly made up of professional nurserymen, who come here year after year with an axe to grind," and while those who have known you, personally, and in your connection with the society from its organization to the present time, are convinced that you make your personal interests conform to the good of the public, and that it is mainly owing to your untiring zeal and self-sacrificing labor that so great progress in horticulture has been made in our State, yet there are many, and I am sorry to say, some who are regarded as intelligent men, who think your labors here are mainly in your own interests. This impression seriously effects your influence, your business, and the good of horticulture itself. Were we to hold meetings in different parts of the State, this evil would be remedied; larger numbers would meet with us; new members would join the society and give it new life and efficiency. We would thus bring into the society what we greatly need, more fruit-growers, commercial orchard-men, farmers, and those who make a specialty of small fruits and other branches of horticulture, yes, and more nurserymen and tree-peddlers too, if you please; all could work together giving and getting good.

The main reason given by those opposed to changing the place of our annual meetings, is that being, in a measure, dependent upon the aid and co-operation of the legislature and State Agricultural Society, we should hold our meetings where we can readily confer with them; and that here we meet with the representative men of the State, show them what we are doing and enlist their sympathies in our work.

A plan has been suggested, which, if feasible, seems well calculated to meet our wants, and to harmonize all interests: It is to hold two meetings for public discussion; one in the early part of winter, at such time and place as may be deemed most desirable;

the other, here at the time fixed by our constitution. It may be regarded as a serious objection to this arrangement that the horticulturists, notwithstanding all their scheming, have not been very successful in lining their pockets with greenbacks, and might find it too much of a tax on their means as well as time.

JOINT CONVENTION.—There is another matter which has a bearing on this subject and should be taken into consideration in deciding it. The agricultural convention meets here about the time of our annual meeting. Some of our members attend both meetings, and more would, could they afford the time and money. At the request of quite a number of our members, an effort was made to arrange it so that the two conventions should be held the same week; but on consulting with Mr. Field, secretary of the Agricultural Society, he thought it would not be advisable, for the reason, that the time of our annual meeting and the meeting of their executive board are fixed by the respective constitutions on the same date, and the amount of business to be transacted by their board will not permit its members to attend a convention the same week. On talking the subject over, it was thought that arrangements might be made to hold a joint convention, if agreeable to both societies, the week of our annual meeting, a certain portion of the time, either consecutive or otherwise, as best suited their wishes, being assigned to each; and it was decided, if you thought it feasible to meet hereafter early on Tuesday, so as to transact the regular business of the society, with perhaps a short business session during the week, and go into convention Tuesday evening or Wednesday morning, taking exclusive charge of it that day and perhaps part of the next, the subject should be presented to the agricultural board, and they would probably arrange it so as meet hereafter early on Tuesday and go through their business so as to join us on Thursday. It may be regarded as an objection by some that by this arrangement we shall miss the homelike, social feeling of our society meetings; but will it not be compensated for by a larger sphere of usefulness and the greater amount of benefit conferred and received? In this way we should probably secure reduced fare on the railroads, and could attend the two sessions proposed at a small increase of expense over the present arrangement. Perhaps I should ask pardon for speaking of this subject at such length; my excuse is, that necessity is laid upon us to move on; we cannot stand still, we must advance or fall behind.

PREMIUM SEEDLINGS.—The first five years of trial prescribed for testing the seedling apples competing for the premiums offered by the society has expired, and the records show that the variety exhibited by Mr. Geo. P. Peffer is entitled to the award. Permit me to suggest that if this premium on seedlings is to be continued, it would be advisable to adopt some scale or degree of merit to which they must conform as to hardiness and quality; either equal to or better than our iron-clads; and that a record be kept, giving a full description of the varieties, their appearance and quality during the period of their trial, so as to guard against mistake, or awarding the premiums without sufficient proof of merit. We have an abundance of good varieties now, what we want is something equal to or even better than our best; something which we can place in the first list and safely recommend.

POMOLOGICAL EXHIBITION.—As already stated the exhibition of fruit made by the society at the meeting of the American Pomological Society was very creditable to the State, and, considering the unfavorable year, was a matter of surprise even to those who made the collection. Perhaps it is enough to say that we did well, but we could have done even better, especially in grapes, had some of our leading cultivators been willing to send samples of their fruit. In apples, our display was far the largest in variety of any of the states. The third Wilder medal was awarded us for "greatest display of fruit." Mr. J. C. Plumb, chairman of the exhibition committee, will give us a very interesting report of the exhibition. Of the \$100 appropriated by the society to defray the expenses of the exhibition, \$67.50 were forwarded to the committee in charge, of which they inform me there is about \$20 unexpended, and to be refunded to the treasury.

EXHIBITION AT STATE FAIR.—The superintendent of the horticultural department at our State Fair, Mr. George J. Kellogg, will give us a full report of the exhibition there. The amount of premiums paid for fruits and flowers is as follows: To professional cultivators of fruit, \$234.50; to non-professional cultivators, \$208.50; professional cultivators of flowers, \$108.50; non-professional, \$144.50. Total, \$696; leaving a balance due the society of \$104.

TRANSACTIONS.—It would greatly add to the interest and value of our yearly volume of transactions, were it to contain more complete reports of the discussions at our meetings, and also full accounts of

the proceedings of the local societies, including some of the most useful, practical papers and addresses delivered before each. At present, most of these reports are very brief and formal; but if the plan were adopted of giving fuller accounts of their proceedings, it would tend to incite to greater efforts, give rise to a commendable spirit of emulation, and occasion a greater interest to be felt in horticultural matters generally. To make these changes, would necessitate an extension of the limits now assigned us; for with reports from each of our fruit districts, in addition to our usual amount of matter, we shall be crowded for space.

Whether or not the time has come to apply for any additional number of pages to our volume is left to your decision, and also the policy of asking for an enlarged edition. Of the 2,000 copies of our report now printed, the State distributes, in accordance with legal enactments, over 1,700, and this number is increasing from year to year with the increase of our local horticultural and county agricultural societies. The number left is entirely inadequate to our wants, for with the most careful use of the volumes the stock of back numbers is soon exhausted. Quite a number of applications have lately been made for the volumes for 1872 and 1873, which could not be furnished. The delay in the issue of the transactions for last year was a source of great annoyance to myself and doubtless to the members of the society, but the cause of it was beyond my control, and for which others, are entirely responsible. The sum of \$150 can be expended yearly in procuring cuts and engravings for the transactions. It was evidently intended that this sum should be used for cuts of practical value, necessary to explain the text of the volume and not simply for purposes of embellishment. Your secretary would be pleased to have the society indicate in what way the sum can be used to best promote the interests of horticulture in our State.

PROGRAMME.—The issuing of the programme for our meeting was delayed beyond the proper time in order to announce a reduction in railroad-fare to those who wished to attend. The railroad companies have kindly granted this courtesy, and for it the thanks of the society are due.

In preparing the programme, an attempt was made to have a variety of subjects pertaining to the different branches of horticulture presented, but ended in the topics suggested giving place to

the choice of the individual contributors. A number of papers have been sent in since the programme was published, which will be read during the session. I trust, if there is any lack in the usual variety, amends will be made in the range of your discussion, and in practical adaptation to the "necessities of the hour."

NOTES FROM THE ORCHARD AND GARDEN.

J. S. STICKNEY, WAUWATOSA.

Gentlemen of the State Horticultural Society:

While our meeting of a year ago was in session I made the resolve that from that date to this, every week should yield some observations and facts, which should be carefully noted down for use at this meeting: I am sorry to say, these notes are far less full and complete than I intended, but such as they are, I lay them before you, hoping they may contain an occasional thought which will interest you.

To the lake shore counties of our State, the past season's apple-crop is something to be long remembered, and I hope something to revive our failing courage, and to stimulate us to continued and more skillful efforts in fruit-raising. Our crop has been only moderate in quantity, but excellent in quality; smooth and fair and ripening very perfectly. The codling moth almost failing to put in an appearance. Were they killed by the cold of last winter, or has the past two seasons with no apples, *starved them out?* We think the latter, and shall expect to see more worms next season; but a little prompt and earnest fighting will hold them in check for several years: And in this connection let us remember that a diminutive crab-apple which is often left on the tree, because not worth gathering, furnishes a home for just as fat and prolific a codling worm, as the choicest apple; therefore, let everything not worth gathering for use, be cut down and destroyed. Scraping and washing the bark of trees to make them smooth, thus removing all hiding places for the worm to spin his cocoon, then placing bandages about the trunks of the trees, for them to hide under; examining and destroying the worms from time to time, are perhaps the most

effectual means of destruction. Sheep or pigs, to eat the defective fruit as soon as it falls, are also good, but many worms leave the apple before it falls and find a home in the rough bark and thus escape.

Scientific men tell us better; but I still have a lingering faith in fires kindled at evening about the orchard; and in open bottles of some sweet liquid hung among the branches. Certain it is that if these do not destroy codling moths, they do destroy thousands of insects, and thus indirectly, millions of worms, that would, if left undisturbed, make heavy inroads on the crops we cultivate, consequently every means of destruction should be freely used.

Facts seemingly demonstrated by the crop of this season would be considerably varied by a dryer and warmer season, and must therefore be taken with much allowance. The cool season has developed Fameuse to a degree of excellence not often attained near the lake, while from some cause Northern Spy has been almost a failure. Duchess is always good, but this year a little better than usual; we are showing our faith in this, by planting five hundred trees, one rod apart each way, expecting that their early and heavy bearing, aided by a little careful pruning, will keep them small enough to be fully accommodated by this space. Are we right or wrong? I have never yet seen a Duchess tree that occupied a full square rod. What will we do with the crop when our five hundred trees bear one to three barrels each? Gather early, barrel carefully, and ship to the market that will pay most for them, in the meantime keeping our faith bright, that the average price realized will be \$2 per barrel or more.

Is it not time that the gathering and profitable marketing, and use of the fruits we grow was more fully discussed and better understood? When I see the wanton waste and neglect of an abundant fruit-crop, I can hardly help feeling that instead of living in a poor fruit country, as we are sometimes told, we in reality have *more fruit than we deserve.*

Gather all fruit promptly and carefully; pack securely in a tidy and convenient package, and sell at the proper time for shipping, at the going price, and your losses will be few and the balance on the right side of your ledger.

Holding for speculative prices is usually unprofitable, as illustrated by some thousands of barrels now in the hands of producers,

about Milwaukee, that might have been sold in autumn at \$3, to \$3.50 per barrel, and are now worth only \$2.50. One of the largest fruit-growers in Illinois, in speaking of the price of apples, names \$2 per barrel as the fairest and most profitable average price, as at that price there will be a free consumption, thus using the largest crops without loss, while at a higher rate sales are slow.

In my young orchard, six years planted, Fall Orange has given me most and fairest fruit. Fameuse and Plumbs' Cider have done nearly as well. Trees of Perry Russet, eight to ten years planted, have for the first time given a full crop, and thus saved their heads from re-grafting. In older orchards Golden Russet has done well, Tolman Sweet, extra well, and Seek-no-Farther entirely beaten its former self in quantity and quality. Twenty Ounce, Colvert, and Alexander have yielded a full crop of very showy and salable fruit; as far as fall varieties can be used, I think these profitable to plant. Two trees of Porter, the only two within my knowledge were models of thrift, productiveness and beauty, yielding six barrels each. Young trees of Utter have shown a fine crop. We shall plant more of them. Fall Stripe, though a fine tree, and very productive, is irregular in size and in form; and coming at the season in does, can never find a ready market. It seems to me unworthy of general planting.

Weaver's Sweet was again over-loaded. Price's Sweet nearly as full, better in quality, but has the habit of dropping badly before fully ripe. Sour Bough gave its biennial full crop. Young trees of Haas, three years planted, showed some fine specimens. No Pewaukee or Walbridge in this vicinity, old enough to bear. Two trees of Blue Pearmain, ten or twelve years planted, usually give half a bushel or so of exhibition specimens, beautiful and excellent in quality but never abundant. •

In an orchard of seventy acres at Rockford, Illinois, Mr. E. H. Skinner has the following kinds: Two thousand four hundred Ben Davis, four hundred and seventy-five Domine, two hundred Fameuse, four hundred Willow Twig, two hundred and fifty Duchess, one hundred Maiden Blush, one hundred and fifty assorted (for family use).

This selection is based on the experience of a bearing orchard, of his planting at Marengo, and Mr. Skinner writes of it as follows: "I have twice taken the premium at the Illinois State Fair, for

the largest named collection, *not one in ten of which ever paid ground rent, while these have nearly always paid.*" Certainly a very good reason for planting them, and the example, one which should be followed by all planters, viz: Look about you and see what is doing best, and plant most freely of that. Mr. Skinner has also an orchard of three thousand five hundred Early Richmond Cherries, which in 1874, gave him nine hundred bushels of fruit, and are models of thrift and beauty; also, himself and partner have twenty-four acres of raspberries, and will largely increase the amount in the spring. These men know what to do with their fruit, and a visit to their grounds in gathering time, would be pleasant and profitable to any fruit-grower.

I have formerly earnestly advocated close planting as a means of protection. I now wish to "take it all back." What trees I have about my home were planted fifteen to eighteen years ago, quite close; apples sixteen to twenty feet; cherries and plums, eight to twelve feet; shade trees nearer yet. For the past five years I have been thinning out, but not promptly enough. This thinning out process is not an agreeable one, because our interest and affection for these things which for years have received our fostering care is sadly disturbed, and because what are left cannot be as symmetrical and well arranged as when planted wider apart with abundant room to develop on all sides. Whoever will carefully note the effect of crowding, will soon be convinced that any part of a tree that does not have a free and full supply of light and air, and is not freely reached by the rainfall and dew, will be weak and feeble, yielding only small and imperfect fruit, and ultimately die.

Our plantation of Philadelphia Raspberries grows larger each year, and this enlarging is based upon the fact that it uniformly gives us more *quarts* and more *dollars* than any other. I hope another year to give you a definite statement of cost and production per acre. At present our planting is too scattered and irregular to do this accurately.

Our faith has been a little weak about the bearing qualities of Long Bunch Holland Currant. This year our doubts are removed by such figures as these: Eighty plants set in April, 1873, yielded nine bushels in August, 1875. From a patch twenty by eighty feet, of old plants, left standing in nursery rows, and neglected so as to

be almost in sod, we took thirteen bushels, and sold the same at \$2.50 per bushel, because so late.

Smith's Seedling Gooseberry first fruited with us this season; a little larger than Houghton; about the same in quality; one or two more crops on older plants will more fairly test its merits. We do not yet feel well assured of the bearing qualities of Downing; have been too anxious to propagate it to give it any chance to bear; have this season heard of its bearing heavy crops in western New York and in Michigan. If it will do as well here, its size and quality will give it the very first place among the gooseberries we can grow.

Miner Plums, from their favorite haunts about Galena, this season found their way to our Milwaukee market. And such plums!—large, smooth, fair, wonderfully uniform, and inviting in appearance. One shipment of thirty-six cases disappeared in a very short time, at \$4 per bushel. Nothing shown in our market this season has excited more interest, or been better calculated to arouse one's fruit-growing inclinations; and but for their uniform failure in my hands for the past eight years, I presume I should be planning to plant largely of them in spring. Certain it is, that an abundance of such plums would be good for the pocket, at least. If we do not feel assured of success with the Miner, the question naturally arises, what others of the same class will do more for us? Among the multitudes of plums so abundant in every thicket over all the northwest, there certainly is something worthy of cultivation, probably dozens of kinds that would yield abundant and valuable returns for our care. Several are already under trial, let us hurry them on to a full and complete test, and seek earnestly for more.

Blight has not neglected us the past season, and as pear-trees were getting scarce, it has amused itself with crab-apples, taking very fine eight to ten year old trees. These were standing in a warm, sheltered spot, where there was not a free circulation of air. They are totally ruined, while others of same age, but in exposed localities and not so well cared for, show no blight; rather strong evidence that, killed by blight, may in other words mean, killed by kindness.

In gathering facts to report to the American Pomological Society, I accidentally discovered a remedy for grumblers against our climate, viz: They should buy a cranberry-marsh, or an interest in a

thousand acres of huckleberries, then they would soon be smiling instead of growling. Black River Falls sent to market this season, four thousand bushels of huckleberries; Stevens Point, two thousand; Tunnel City, nine thousand, at an average of about three dollars per bushel: Many were also sent from other points. A very snug little income to be gathered from the poorest of soils. With the income from what were recently considered worthless marshes, you are all familiar. What other State has such sources of fruit-wealth? And what sort of people are we, who will not work patiently and persistently to so adapt our varieties and management to the requirements of climate, as to succeed in the culture of the larger fruits as well?

About ornamentals and ornamental planting I have little to say. What I have noticed during the year, in parks and pleasure-grounds, has only impressed more strongly on my mind the beauty of simplicity. Green grass, nature's own carpet, studded with irregular groups of well chosen trees always brings to me a feeling of comfort and rest not found in more artistic and elaborate works. In the useful and ornamental there is one feature which, though not very encouraging or profitable to the nurseryman, is a golden opportunity to the planter. Evergreens, nursery grown and of excellent quality, are so abundant and so cheap that all can afford to plant them freely, in belts and wind-breaks, wherever they are needed for shelter or timber. If the present large supply shall find its way to useful and prominent places on every farm, a good work will be accomplished.

Though many of our members are not nurserymen, all will feel some interest in the present condition and out-look of the nursery business. Perhaps there is no more depression here than in other things, yet for the past three years there has been very little of encouragement, and throughout the country many good and worthy men have gone slowly down to failure and financial ruin. To-day the prices that can be realized for many of our goods are below the cost of production. I have been at some pains to learn something of the quantity and quality of general nursery-stock in the west, and from knowledge thus gained I look confidently for a decided improvement in the fall trade of this year, and a still greater one in the spring and fall of 1877. For two springs past, the young stock planted has been, perhaps, one-fifth the amount of former

years; the same will hold true of the coming spring. Join with this the fact that for some years, planting in orchards has been rather light, and that in the mean time we have been gradually growing into varieties in which the public have more confidence, and it is but reasonable to suppose that our business will improve in a way to benefit both the nurseryman and planter.

THE UP-HILL SIDE OF THE APPLE-QUESTION.

BY GEO. J. KELLOGG, JANESVILLE.

I have chosen the up-hill side that I may yet below and catch the apples. Perhaps the experience of every apple-grower in the State would more fully illustrate this subject than I can do it. Ever since Eve stole the first apple, apple-growing has been up-hill business. In the summer of 1835 I took my first lessons in horticulture in Wisconsin. In 1838, I planted my first apple tree, and that was a miserable, crooked Rhode Island Greening, bought of some eastern tree-peddler. That tree still survives the blasts of Wisconsin winters, and has borne some good fruit. It is needless to add that it stands near the lake shore, where in after years I picked as fine rare-ripe peaches as I ever saw. The winters of thirty years ago were much like the present one, the thermometer seldom falling below zero.

Since 1855, O! how our dreams of Eden have changed! How many have proven that apple-growing *is* an up-hill business. How very few have made it profitable, except with a very few varieties, and in favorable locations. Seasons of plenty have afforded good winter apples in Janesville at twenty-five cents per bushel, by the wagon-load, and I am informed that at picking-time, in the orchard, good winter apples were sold last fall, at fifty to seventy-five cents per bushel, in Rock county.

Now to get at those varieties that it will pay to plant without an if, is the object of this paper. To this end I have obtained the list of our most successful operators in various parts of the State, showing what varieties have paid best for the last ten to twenty years, and in the order of profit, the number of varieties not exceeding

ten. This list is appended below. More agree upon the Fameuse as first for profit than any other, while nearly all have from three to five of the five varieties so long recommended by this society for general planting, to which for years no one objected. These varieties stand in the order of season, viz: Red Astrachan, Duchess, Fameuse, Tolman Sweet, and Golden Russet. Some of the new varieties do not appear, as they have been tested by but few. It is remarkable what a range of varieties it takes to make the ten.

TABLE showing value for profit, estimated by fruit-growers, of different varieties of apples.*

VARIETY.	A. J. Phillips.	J. W. Emmons.	J. M. Smith.	E. Wilcox.	H. Floyd.	E. L. Hatch.	Chas. Hirschinger.	A. G. Tuttle.	Wm. Finlayson.	N. N. Palmer.	H. Steinfort.	C. H. Greenman.	J. C. Plumb.	Geo. J. Kellogg.	B. B. Olds.	Geo. P. Peffer.	H. M. Thompson.	J. S. Stickney.
Fameuse	2	3	1	4	4	2	1	1	3	1	1	1	5	1	5	1	7	6
Red Astrachan	6	3					1	8	4				8	5			2	
Duchess	1	7		1	1	1	4	1	5	6			10	4	3	3	10	
Tolman Sweet	3	5	2		5	8		10		7			10	6				
Golden Russet	5	4			8	3			4	5				1	7	9	3	
Utters				3					6									
Plumb's Cider				2	3	7	7	3					4					
Seek no Further				2							7					5		7
Willow Twig									9	2			3					
Ben Davis													12		10			
St. Lawrence								9										
Haas						5	2		4	6			2					
Alexander	4		3													2	3	
Fall Stripe							5		8	8	8							
Yellow Bellflower	10																	
Rawel's Janet	1							10	9						9			
Roman Stem	2																	
Sops of Wine	2							5					9	3				1
Nod-head					6													
Walbridge						4		2					1					
McMayhan's White						6												
Pewaukee													7			4		
Lowell													9					
Fall Orange						2			6						6	6		8
Victuals and Drink															7			
Northern Spy		9									4	5						9
Colvert							10										5	4
Fall Wine Sap									7		9	3						
Winter Wine Sap									10									
Red Romanite										3								
Weaver's Sweet	6						6										6	5
Fall Janet																	4	
Autumn Strawberry							8											
Perry Russet															4		8	
Hulburt																		
Kirkbridge White														7				
Keswick Codlin														8				
Domine											2							
Paradise Winter Sweet											3							
Jonathan															8	9		
Sour Bough							9										1	

* Most profitable 1, least 10.

We may learn from these notes, first, that no list can be depended upon for all soils and locations; second, that planting for profit may imply two points—market and family use. The first would embrace such varieties as will readily sell in their season. The second would include a much greater number of kinds for succession and quality; for instance, one bushel of Fall Wine-Sap in the family, would be worth a wagon-load of Red Romanites for autumn, while the long-keepers are equally valuable in their season. A full supply of apples in the family will be found the most profitable sanitary investment that can be made.

What to plant is the question, and although we may know more than we did twenty years ago, we don't know half as much as we thought we did then. Then we could have made out a list that would have suited everybody; now we gather at our annual meetings, and can't make a list that will suit anybody.

Soil and location are the first considerations in this question; and I must again caution planters to look about them, and see what is bearing best, and is most desirable in their own vicinity. This cannot be too strongly recommended, for often a change from one side of a river to the other will give an entirely different soil, and require a new list. I think all will agree that our oak ridges, with their clayey subsoil, are best adapted to the apple, and yet one of our experienced cultivators writes me the Perry-Russet is a success on light sandy soil, while I never saw it succeeding anywhere but once, and that was on clayey soil. No great wonder that we knock down and drag out some one at each annual gathering. Any point you wish, touching fruit-growing, can be here proven beyond a doubt, until some one else takes the floor; and then the other side can be as clearly demonstrated, even to the growing of strawberries at *five hundred* bushels per acre, or the cost of pears at five dollars each. We can call up a witness to prove any point you choose to name, and give dates, facts and figures, and yet the experience of some one else is quite the reverse, in the same county, if not on the adjoining farm. With this conflicting testimony, how are our judges to decide the weighty matters of horticultural law, or how are new beginners, seeking to plant successfully, to choose from our reports. I am convinced that general success is a failure, and that there is an up-hill side to this question. In every

neighborhood some variety is a success; go for that variety, and don't be disappointed if every other fails when that succeeds.

I am more and more convinced that we are yet in the A. B. C. department of Wisconsin horticulture. It seems a wonder that we ever unanimously agreed on five varieties of apples for general cultivation, and that that list remained so long undisturbed. Now our list of five for hardiness do not all appear in the list foregoing, although it embraces forty-one kinds. The field is open for new varieties, and they are coming, probably "three hundred thousand more;" every one will be a failure somewhere. How full the world is of humbugs and teeming full, the horticultural department. To choose, sift, try, reject, condemn, and last of all, to recommend, and that too with great caution and a sparing hand, is one of the duties of this knowing association.

I have no doubt but the bright side of fruit-growing with the assurance of success is before you, ready for publication. It is well. We need all the stimulants (except the bottle, we've had a little too much of that already) on fruit-growing we can get; nor would I discourage the feeblest effort of some shiftless land-owner who plants without fence, trusting to the annual pruning by stock and the June grass protection. I would almost encourage such a one by selling him the trees on time, yet I would like to see a careful selection of varieties, that under favorable circumstances success might be reasonably certain. If the ground is not too dry or the frost too deep, or the drought too long, or the blight too bad, or the spring too early, or the frosts too late, or the blighting east winds in blossom-time too severe, or the winters too open, or the winters too hard, or the summers too hot, or the borers get in, or the canker-worm gets up, or the codling-moth too thick, or the thieves too plenty, or the winds too hard, or the frosts too early, or the markets too full, or something else turns up that cannot be avoided, then we may all get rich at this apple-business.

We have hope in some of the new kinds. Will they be like the Fameuse among apples, or the Wilson among strawberries, adapted to all? Will they be in every man's list for profit twenty years hence? It is sometimes encouraging to know that we are no worse off than our neighbors. Ex-President Stickney wrote me in September, on his return from an eastern tour, that no where east had he seen so fine a show of apples as in the lake shore counties of

our State. And while B. B. Olds, of Rock county, raises his thousands of bushels annually, with a proper selection of kinds and favorable location, apple-growing in Wisconsin need not be an uphill business. We have reason to take courage, and the future of this society may be wonderful; after all our wanderings up and down the horticultural stream, mid the snags, quicksands, and rocks that have so often upset our bark, we may glide safely into deep water, and though we may not realize our golden dreams, "future generations may rise up and call us blessed" for benefits conferred on them.

TREES AND FOLIAGE IN LANDSCAPE.

BY CHARLES S. ABBOTT, SUMPTER.

The Greek Islander, on being shown the vale of Tempe, and being asked if it was not most beautiful, replied: "Yes, it is beautiful, but the sea; where is it?" And born among the hills and mountains of the White Mountain region, when shown broad prairies and treeless plains, I feel a different want, and am ready to cry, "The forest covered hills, where are they?" And, doubtless, as the sea, beside and upon which their childhood and youth had been spent, was so much beloved by the Greeks, with their quick and ardent sympathy with nature in all her manifestations, so that the ten thousand, when they caught sight of the distant Euxine, forgot both the toils of their long march, and the dangers and hardships of their terrible retreat, and mindful only that they beheld the blue waters again, though still far from home and rest, sent up a shout, "Thalatta, Thalatta," the sea, the sea; so many a native of wooded regions, even if he had found a home and wealth upon the western plains, has pined for a sight of the evergreen-clad hills; for the solemn wail of the wind among the pines; for all the tokens by which the fair groves and the deep forests address the senses and whisper to the soul.

It may be said, with a good show of reason, that economic forestry, the details of tree-planting, tree-culture, and the cutting and use of timber, do not properly come within the scope of horticultural discussion; but, I fancy, no one will deny that the planting

and tending of trees, whether singly, in lines, clumps, or groves, as well as the care of self-planted and native trees, and the cutting and clearing off of trees and woods, considered as an element of landscape making, comes properly within the purview of a horticultural essay. At the same time, I must insist that, usually or almost invariably, an eye should be had to practical use of some kind, either in planting, preserving, or cutting away a tree or shrub. And it is wonderful how constantly an intelligent economy and a true and correct taste will coincide and work into each other's hands in the location of trees and woods. But it is lamentable, as well as strange, to see how often usefulness is defeated and taste offended in their arrangement. To cite a single instance: We often see numerous trees and shrubs crowded directly before a farmhouse, where a single tree to shade the porch would be enough, and leave room for a pretty piece of smooth turf, while each side and the space behind the house are adorned with old rail piles, weeds, and nettles, leaving the house and the ground around it which is most used by the inmates exposed to the full sweep of bleak winds, and certain unsightly out-buildings, and the approaches to them fully open, not only to the wintry blasts and drifts, but to public view from the road on each side and several neighboring farms. What would be thought of an individual who should adopt a similar rule in clothing, and exposing different parts of his own person?

Now, I am not going to lay down rules or give any specific directions for planting around dwellings, nor, indeed, anywhere else; for circumstances and surroundings will vary each case more or less; rules in this case are like rules in behavior—they may as well be simmered down to these: use common sense and good taste, which means much the same as good judgment, and, in reference to what I was just saying, I may add, let others see you at your best, and hide your weak points, both in your home and in your manners. But what I set out to do was to hint at some general ideas on the subject indicated at the head of this paper, and here let me say, if any man is disposed to sneer at or despise the idea of making beauty a consideration (always in connection with use) in planting, preserving, and cutting down, I am sorry for him, and sorry for his neighbors, for I am as sure as I am of anything that the man who has a true sense of the beautiful in natural scenery, and a pro-

per estimate of the value and importance of that sense, will, other things being equal, be a far better ditch-digger or navey, than one who is destitute of such sense and such estimate, to say nothing of his value in the relations of friend, neighbor, citizen, etc.

Having already alluded to planting around dwellings in connection with the assertion that use and beauty would be found usually to agree in the planting of trees and shrubbery in a landscape, let us see what the effect of the two different modes hinted at, will be as elements of scenery. As farm buildings are generally distributed in this region, the landscape will need the frontage of most of them to be tolerably well displayed for the best effect, except in the case of great sweeps of open, level country, where great numbers of prominent buildings would not harmonize with the vastness which is the leading sentiment of such a picture. Here then the farmsteads need to be well wrapped in foliage, only giving a hint by a roof or a gable here, or a glimpse of white among the trees there, of their presence. And on such open stretches, comfort equally demands more planting all around the dwelling. But in an undulating or hilly country, such as most of this State, with groves and woodlands properly distributed, but a few farm-houses will be in sight at once, and these should be well thrown forward to prevent the aspect of quiet and seclusion belonging to such a view from sinking to one of sleepy-hollowism and dullness. And here so much wind-break is not needed for comfort. As I have said, a single tree for shade and smooth turf in front, will be enough to break the naked look, and other foliage will be better used to flank and back the house, having regard to purposes of shelter, and concealing what is better hid.

These ideas are best illustrated by extreme cases; a sensible landscape painter representing a cottage in a deep narrow glen between steep and heavily timbered hills, would surround it with a patch of clear, open ground; he would also make a house upon the summit of a bold ridge, peep out through a narrow vista between masses of heavy foliage. Still a startling effect now and then is good, to break up monotony, and I know of artistic souls whose dwellings are perched where the south-wester is unchecked in its howling course for miles, without a bush to deaden its sweep around the house.

Before leaving the subject of trees around dwellings I wish to

advert to one or two ideas which I do not find brought forward in anything I have read of late on the subject. First. The planter should consider whose eyes he is planting for, whether his own and those of the inmates of his house, or those of outsiders. That is to say, whether what he plants is designed to affect the view *of* the house; or the view *from* the house. And this, both in regard to what it conceals, and what it shows. In this connection, it is of great use to observe that a tree, clump, or grove requires, to produce its proper effect as an object in the view, a distance from the eye proportioned to its size; and this distance, to give the best effect usually requires to be several hundred feet, at least, for medium sized trees, of say forty or fifty feet in height. For we shall find that to strike the eye well, it must be viewed with a good margin all around it, so as to be seen in contrast with the ground, the sky, the dim distance, etc. Consequently large trees near the house are hardly to be considered as elements of the landscape as seen from the house; shrubs, flowers and a great deal of smooth turf fill the near foreground better, the trees and groves that fit well in the picture are those around your neighbors houses at the other end of the farm, and so on, to miles away. Not but that the huge bell and tent like shade of a heavy oak or elm, close to the house, or a close set clump of pines a little to one side may be made to come in very well if you will sternly insist that everything else near shall be mown at least once a month. But if you have concealed the finest views of the distance by a drizzled expanse of trees and shrubs, without any openings for the eye, you may boast that you have spoiled the foreground of your own view, and hid its middle distance and background for the benefit of those who look at your home from a distance.

But enough of dwellings and other artificial structures and their surroundings. Even when seen to the best advantage, they are but accessories; the more prominent and pretentious their style and character, the more surely they mar the effect and defeat the intent of true landscape, which addresses itself, not to the architect, the builder, or the house-painter, but to many as "looking through Nature up to Nature's God." So while a ruin, a rude hut or an irregular and weather-worn old building will harmonize perfectly with any view, new and high-colored buildings, fences and roads running in straight lines, as well as rows of trees, and all

such tokens of artificial arrangement, are destructive of beauty and grace in landscape, unless kept well back, and only just hinted at, not shown. As, in a sea-view, one enjoys the distant sails flitting along the horizon, careening with the wind, now gleaming white in the sunlight, now dim and gray in the ocean haze, but would resent as an intruder the best ship that ever sailed, if she came so near as to break in, with the details of her build and rig, upon his contemplation of the waves in their eternal unrest, the sky, with its clouds flitting like the sails, and restless as the waves, and the wave-worn rocks and surf-swept beach, the one wearing itself out in stubborn opposition, the other ever growing in unresisting submission; so in artificial accessories to land scenery there should be a modest yielding of precedence in color to the azure of the sky, the gold of the sunshine, the countless hues and tints of leaf and flower, of cloud and earth; in form, to the wide sweep of the dim horizon, the boldly-projecting hill, the gentle curve of the valley, and, in surface, to the restful green of the grass, the massed foliage, the blue waters, and the glittering white snowfield.

The three aspects of scenery in nature, that is, sky, earth, water, have each certain elements which we have to recognize if we would attempt to discuss, study or analyze them. Prominent among these elements are form, color, light and shade, and *tone*, as it is technically called by artists. But being neither artist or critic of art, but only an unlearned student of Nature, writing for those who are,—some of them, perhaps—not much more learned than myself, I have not much to say about “tone” of foliage as seen in nature. For, beyond doubt, the element in a view which is termed tone, is derived as much from the state of the atmosphere and the quality of the light by which it is seen, as from the character of the surfaces viewed through that atmosphere and reflecting that light. But the two former conditions are constantly varying, and so indeed is the last, in the cases of sky and water; but the earth and its clothing of herbage and foliage, though varying, to a certain extent with regard to the surfaces exposed to view, with the seasons, with the dews of morning, the moisture of showers, the heat and drought of noon, the evening’s coolness, the dead calm, the gentle breeze, and the rushing gale, is still, in a measure, constant in character. So we may well give attention, not only to the form, habit or style of different species of trees; not alone to

these, and the coloring of their leaves, flowers, and wood; nor merely to all these, combined with their ability, or want of ability, to show strong, sharp, and well-marked contrasts of light and shade, but, with them all, to the character or texture of surface which they present to the eye, especially when grouped or massed in groves or woodlands.

I do not know that any poet has ever termed clouds the groves of the sky, but as elements, in scenic effects, there always seemed to me to be a close resemblance between these airy groups and masses, and the terrestrial shades which they overlook. But not to run a fancy to death, I will only instance the similarity in form, style and depth of coloring between the foliage of the sugar maple, with its solid massiveness, rich lights and deep shades, and the cumulus, the "thunder head;" or the pale, thin, cool-tinted cirrus, curl-cloud or "rain-streak," and the weeping birch. But it is not fanciful to remark that clouds and foliage are so much alike in structure as to present very similar phenomena in absorbing, transmitting and reflecting light, so that the rarer medium in each case, will be softer in tone and paler in coloring, than that which is more dense, and a mass of either, which has a smooth, clearly defined surface will reflect brighter lights and cast deeper shades, than one having a ragged, loose, irregular surface. Then too, the very form, size and surface-finish of leaves have a great significance in the general effect of the masses which they go to make up. Witness the varying aspect of trees and groves when tossed by the wind.

To bring all this to bear on our present purpose, we may say that in certain species, or in most, we have certain combinations of the above elements which give a definite character or expression to their foliage, especially as seen in the mass. Thus our oaks (except the burr oak) combine unyielding rigidity in form, with a degree of dullness in color, and lack of contrast, of light and shade, which makes them seem to me plainly dressed, and also makes the aspen, with its green at once soft and lively, the very best foil in color, as its light and airy form is in shape for them. The elm, single, is strength and grace combined; in a mass, its rounded piles of grayish-green are just a little tame of themselves, but if you want a superb effect, let a few fir or spruce shoot up the ugly blackness of their cones among the elms. It is like mixing a group of Spanish brigands in full costume, into a Quaker meeting. This is no fancied

grouping, for I have seen such an effect in the borders of lowland woods in New England. Even a Lombardy poplar looks well for once when it sends up its spire from among a group of elms. The soft maples (*acer rubrum* and *dasycarpum*), are akin in effect to the elm, the last still more weak in character of foilage, and requiring to be toned up by a free mixture of riper and bolder forms and colors, the linden, burr oak, sugar maple, hickory, and mountain ash, are all good for this purpose, and I might add to the list, black and white ash, box elder, ironwood, and all the pines and cone-shaped evergreens, planting of course tall-growing kinds inside the grove, and the more diminutive species on its borders.

The sugar maple has been denounced as "ugly, hard in outline and ungraceful in form," etc., by writers upon landscape and ornamental planting, and I am ready to admit that an unthrifty sugar maple is a very unsatisfactory tree, and except on a soil that suits it, it will not thrive. Sandy, alluvium, and clayey soils are its abhorrence, and its revenge for being torn from its native loam and set upon such, is to be as stunted and ill-looking as possible. Then its rich coloring, solid and massy character, excessive boldness of shading, require, for the best effects, to be mellowed by distance or softened by mixture with foliage of a lighter and more undecided character, and forms either more graceful and flowing, as the silver-leaf maple, golden or weeping willow, etc., or those more symmetrical, like the aspen and larch. Even the stiff, dark and somber forms and colors of firs and spruces will harmonize well in a grove with this noble tree, if planted upon high ground and viewed from a distance of a mile or so.

But it will not be my time, if ever, that one can see, in Wisconsin, grouped in a frame of fresh green pasture sod, clumps of this maple mingled with low-headed beech, with broad arms and leaves of the tenderest green, with limber-twigged, yellow and black birches, feathery hemlocks clothed to the ground, and black spruces, frowning like grim old Puritans at the gay attire of their neighbors, and for aught I know, foretelling a hard winter as a judgment upon them for the vanity of their apparel.

Truly I now know full well that there was an idle, mischievous boy who lived with, loved, and delighted in those groves and without thinking of that, or of anything else for that matter. I remember too, an old church on a hill, from whose gallery windows such

a boy, when the most of the congregation, upon a summer Sunday, were nodding their approval of the points of the sermon, could look up a valley whose western slope rose into hill-pastures where groves of rock maple, springing up after the original timber, had been cut off, had been thinned of all other species of trees and allowed to grow up low-limbed, heavy-topped, and well-developed for sugar groves. These were miles away; in the foreground were groves of tall young pines, then a deep gorge in the bottom of the valley had its bottom and one side filled with a lusty growth of deciduous trees, and its right hand bluff rose a dense mass of hemlock that were trees no doubt when Columbus sailed, with a few old pines of a hundred feet or more, near the top. There were woods all along the tops of the ridges, groves and sturdy oaks; and fringes of trees and shrubbery along fences and roads; orchards upon slopes, and elms along the stream in the meadows, but my eyes always rested upon those distant clumps of maples. It seemed as if they were most perfectly in keeping with the glorious sunshine, with the rich summer haze that only softened but did not dim their glowing lights and deep black shades; perhaps it was because my taste was uncultivated, but may it never be so cultivated that that effect shall cease even in memory to be a "joy forever." But those sugar-groves could give picturesque effects in a background of wintry snow as well. Only give them sunshine, and the silvery gray of their wood changed by distance and the contrast of the bright snow to a tint that was marvellous; it seemed too clear and too airy to belong to earth; such as the Pilgrims might have witnessed in the groves of Beulah.

Though this State affords a great deal of ground suitable for this maple, there is still more where it does poorly, if at all, but we have two other native trees, both highly valued by all admirers of fine foliage, that are much more difficult to grow in our climate. I mean the hemlock and yellow birch. Still, on proper soils, on northern slopes, with shelter from the west and southwest, they may be made to flourish; but success with them will always be among the rarities of tree-growing in southern Wisconsin. Not so, however, ought it to be with the sugar maple. It has long been a wonder to me that planting this tree in large groves for sugar and timber has received no attention in the United States. Would it not be well for horticultural societies to take the matter up and by

such methods as seem best, endeavor to cause a beginning to be made? I am aware that we, as a people, are tree-destroyers, not tree-planters; but considering the economic use that is made of this tree and its products, it seems strange that no attempt is made to start new groves. I can find abundance of farms in the hilly, "white oak" lands of Dane county, on which are tracts, reduced by cropping and for which the farm affords little manure, which might be set with maples, cultivated two or three years and then turned to pasture to a better purpose than they now answer, and fresh land, on which timber is now growing, cleared to take its place. Of course, I suggest this as likely to be done at present by but few, but are there none to begin now to do what, no doubt, after a little time many will do? As I have already hinted, high points and ridges, hillsides, often too steep for profitable cultivation, are the very best lands we have for the maple, and here its style and character of foliage appear to the best advantage.

I am inclined to offer two axioms in tree-growing for scenic effect; the first, I think, also, will hold good in forest-growing for economic purposes, and for ameliorating defects of climate, viz:

1st. Clear valleys, bottom-lands, and foot-slopes; grow woods upon high lands, steep hill-sides and rough broken ground.

2d. The bolder, more abrupt and more strongly contrasted with adjacent level and clear ground, the situation, the more bold, hard and decided in character let the foliage covering it be. There are many modifications, and some apparent exceptions to the above rules: Let us examine one of the latter. Take a craggy pinnacle, such as are common in this region; we shall usually find it bearing upon its summit red cedar, trailing juniper and white birch. These, though slow in growth, are healthy and vigorous, and are in perfect keeping with the situation; the two first, according to rule second, harsh in coloring and rude in character, but the birch soft in color and character is the most striking object and seems to finish the picture most perfectly of the three. Now we say first; the evergreens are, being rude and harsh, in keeping by consonance; the birch, being soft and graceful, is, by so far, in keeping by contrast, and this, being always a more striking effect than mere consonance is the better suited to such bold scenery; and second, the birch, spread out, almost creeping from exposure to violent winds and the aridity of the soil, also by its whiteness of wood, but still more

from its foliage being in such a situation seen against the sky, is in its way as pronounced, bold and striking in character as our rule requires. But let us see how less abrupt prominences require corresponding gradations of boldness in foliage. Here is a sharp shoulder or buttress projecting from the side of a ridge into the cleared valley; its profile is very steep, but not much broken by crags or cliffs. It is of course quite dry and rather sterile in soil, especially toward the top. Its foot-slope is cleared up to where it is quite steep, the "pockets" or retiring nooks on each side, are cleared also. Now the dry and barren top will probably have its sprinkling of sprawling birches and dark cedars, do not disturb them unless it be to set an American mountain ash or so in an open spot, or a few red pines. Lower down, red pines; then as the soil becomes more moist, white and Scotch pines, with a sprinkling of spruce and larch, and along the edge of the cleared base, let a few aspens mix in for edging, but do not suffer any bordering of shrubs or small growth here; let the change be instant from full-sized pines with low-branched bodies, to the smooth foot-slope. Of course, this planting will be varied by exposure and shelter; on north and east slopes, if you are able to cultivate well, you may venture on hemlock, and edge with yellow birch; on southern and western aspects, put in the more cedar and red pine, and if very hot and sandy, the pitch pine may be better still.

In the more hilly parts of this State much hill land is already cleared, and more, doubtless, will be. Its best use is for pasture, as its liability to destructive washing making it ruinous to till it. Here then we shall, or should, have open pasture, groves, and woodlands mixed and melting into each other; for by repeated cutting we already see our woodlands opening into glades of grass, and pasture lands spring up into clumps of timber. Here again let us try our hand at matching contour of ground with character of foliage. A sweep of hillside, much of it open pasture; the gentler slopes, cultivated fields and groves of hard maple (hard, indeed, in tone and outline), spotted along the slopes, peeping over the summits, and nestling in the moister ravines, relieved by dark evergreens, yellow-green aspens, and grave oaks.

If the face of the country is only undulating or rolling, landscape effect requires different character and handling of foliage. Here the converse of our second rule applies; the more gradual the

slope, and the more gentle the elevation, the softer in outline, the more neutral in coloring, and quiet in tone the foliage of the woods. Here edgings of shrubbery and dwarfier trees are in place to shade off the larger growths; cottonwoods, willows, and scarlet and burr oak being less stern and rigid in character than the white oak, the elm, and linden, the silver maple and } river birch should relieve each other. I say relieve, for strong contrasts are not in keeping upon such ground, and should be sparingly employed, and very bold or harsh forms like firs, spruces, and poplars should be well kept under by distance, and very few of them in sight at that. A row of Lombardy poplars on the top of a swell, appearing against the sky once in a day's journey or so is enough; near by they are about as sightly as telegraph poles. I know they are said, like spires of churches, to "point heavenward," but so few people ever look at a guide-board to that place so long as they are able to be out of doors, that they are practically useless in that capacity. The conical evergreens are even worse; in a group of soft foliage, one or two appear well, but when set in numbers in their naked harshness of color and form, they are disagreeably like stacks of poles in a hop-yard. The pines although formal enough are, the white and Scotch pines especially, better adapted for massing in groves upon elevated swells and stony or poor ridges and as wind-breaks, as well as additions to scenery would be first-rate. And here again, we should find use and beauty to coincide in calling for a bordering of hardy shrubs and trees like the red cedar to shelter the young pines from prairie winds and soften the abruptness of the transition to open ground.

In general, for every situation, in considering the character of foliage as scenery, regard must be had to distance, framing and accompaniments. By framing of natural scenery I mean the apparent surfaces in front of, on each side of and behind the object looked at. This framing may be sky, water, open ground, or foliage as we direct our attention to one object or another in the view. But there must be a correspondence in character and intent between the picture and its frame. We do not surround a mourning picture of the tomb, the funeral cypress and weeping figure, with light carving and gay colors, nor enclose the portrait of a delicate woman in the rich and massive frame necessary to support the likeness a fat, red-faced citizen. Of accompaniments like framing it may be

said that they and the central object are continually changing places in natural scenery, that is in many cases. Thus, sheep, horses and cattle in a field, and the turf, foliage, individual trees, rock, etc., may each in turn be principals and accompaniments. On the other hand, some objects irresistibly attract the eye to themselves and hold it; a giant elm in a meadow, a lightning blasted oak, a deep gulf far below us, filled with a rolling sea of green boughs; a far off rock or cliff; a peculiar contour at some point on the horizon, these or many other natural or artificial objects may make the principal points in the view, and reduce all in their vicinity to the rank of accessories. In such situations, planting or removing foliage for effect, as in other cases, requires, as I have said before, good sense and good judgment, that having eyes, one should see, and having powers of comparison, reflection and analysis he should exercise them; and last but not least, having exercised and improved, not debased and starved the imaginative faculty, he should use and prize that as a good gift, intended to raise him to a higher plane than that occupied by the mere sordid wants, cares and ambitions of life.

However poorly I have succeeded in the performance of my task, I know that I shall not be without sympathy with and comprehension of its purpose, and in this trust offer it, with no apologies save for hasty and imperfect execution.

WHAT VARIETIES OF FRUIT CAN BE RAISED CHEAPLY AND WITH PROFIT IN THIS STATE.

BY GEORGE P. PEFFER, PEWAUKEE.

As our State has been divided into fruit-districts, and a committee-man appointed to report on all matters pertaining to fruit-raising in each, it will probably be of little use for me to say much on this subject; but a few hints given may serve to call attention to the advantages we have in the line of fruit-production, and a statement of some of the facts in relation to what has been accomplished, may induce some of the doubters to still have faith in the fruit-producing capabilities of Wisconsin, and convince them that we can still

claim to be classed among the fruit-growing states of the north-west. The manner in which the horticultural products of the State were represented at the Pomological Exhibition at Chicago, last September, was a surprise to some of the eastern and southern states. The show was very creditable to us as a State, but had the members of our society contributed as they might have done, or even as well as they did do at our state and other fairs, we should have taken the second, instead of the third premium, on "State display of fruit." It is sufficient to say, that the exhibition clearly proved to all who saw it, that we can raise fruit in Wisconsin, notwithstanding our severe winters and "polar waves." It is true that Michigan, and perhaps other states, are more favored than we are for this purpose, being nearly surrounded by water, so that the cold winds are greatly modified before reaching their shores; but they are not wholly exempt from loss. Last winter (1874-5) Lake Michigan froze over, and, in consequence, fruit and the trees in Michigan suffered, and more damage was done than with us.

Some portions of this State are much more favorably situated for fruit-raising than others, as along the shore of Lake Michigan the ameliorating influence of the water on the atmosphere is so great that from within one to eight miles of the lake nearly full crops of fruit were realized the past season, and from ten to twenty miles back varieties that are commonly regarded as tender will live and yield fruit, while in the interior and western portions of the State, as a general rule, only the hardiest varieties can be depended upon. Scattered through the State many localities can be found where the conditions of soil and aspect, etc., are so favorable that plums, pears and many even of the tender varieties of apples can easily be raised; in many others only the Russian and Siberian apples, the improved wild plums, and small-fruits will succeed. There are few farms on which locations cannot be found where some of these can be grown successfully. The area adapted to the cultivation of the small-fruits, such as strawberries, grapes, raspberries, blackberries, currants, gooseberries, whortleberries and cranberries, is very large. The two last are specially adapted to large portions of our State, and though mostly grown in a wild state, they already have considerable commercial value, as large quantities are yearly picked and shipped to our own and other markets. Owing to dry weather and early frosts the yield the past season was far from an average, but

sufficient quantities were gathered to supply the demand at moderately high prices. The prices of all kinds of fruit were comparatively low the past season. The average quotations in the Milwaukee and Chicago markets were from \$1.50 to \$3.50 per barrel for apples, and from \$8.00 to \$10.00 for cranberries. Good apples were sold from wagons in the streets of Milwaukee, last fall, for twenty-five and thirty-two cents a bushel, and good Siberian apples at twenty-five and fifty, per bushel. Raised in proper localities they yield a good profit at these figures.

There is a large demand for all kinds of small fruits in our cities and large towns, and their cultivation can be made profitable if carried on economically, in supplying the home market; and along the line of our railroads, large quantities can be raised and shipped to advantage to other markets. Fruit and vegetable canning factories, where established, (and many others would be started if there were sufficient enterprise on the part of our farmers and fruit-growers to supply them with fruit,) will consume large quantities of small-fruits with great advantage to the grower, the place where located, and the general public. Many of the small-fruits when dried are a staple in the market and have a uniform demand at fair rates, so that farmers and cultivators of small-fruits can, when the market happens to be full and prices low, secure fair prices for their labor by drying the surplus, for which they will find a ready sale.

In places where there is no market for fresh fruit, and even where they are near at hand and prices are low, it will pay to raise fruit to dry. The cheap modern conveniences for drying fruit by the heat of a small fire or of a lamp have greatly lessened the expense and labor attending it. A cheap sun dryer may be made by fitting a window sash to the top of a box, putting ventilators in the sides so as to let out the moisture and give fresh air. If the ends or sides are open at the top and covered with wire gauze, the fruit would have the needed air and be protected from flies and insects.

Some will ask what varieties are best and most profitable? Of strawberries, we would say, the Wilson and Green Prolific; of raspberries, Doolittle, Davison's Thornless, and Mammoth Cluster for marketing and drying; the Philadelphia and Clark, for canning and preserving; of gooseberries, the Houghton and Mountain for canning; of currants, the Red Dutch, and White Grape; of grapes, the

Delaware, Concord, Salem, Agawam, and various other kinds. All these planted in good, clean, rich soil and well cared for and mulched, will yield good crops and are among the hardiest and most profitable kinds of small-fruits we have.

The cranberry is destined to be one of the most important of our small-fruits and one for the cultivation of which no other state in the Union has equal advantages. It does well on low, marshy lands, where the ground is dry enough so that the plants can be out of the water two months in the year, during the fruiting season. It also does well on land that is wet only during the winter months, and early spring. After the plants are once set and have got possession of the soil, no cultivation is needed. There are many pieces of marshy, peaty, and boggy land and sandy sloughs, that are now worthless, which, if once planted with this vine, would return a large profit for labor and money expended.

Among the stone-fruits, we have cherries; the Kentish and English Morello, also the Early Richmond, in some localities, which can be raised with profit. Plums; many cultivated varieties, and a large number of native or wild ones will yield abundantly in sheltered positions, and in locations where the modifying influence of large bodies of water are felt. But to secure a crop of this fruit, we must prevent the depredations of the little Turk, the curculio. The large number of wild plums scattered all over the State, indicate that the climate is adapted to their culture and that with proper care they will do well. The native fruit usually finds a ready market, on account of its being excellent for preserves. The Winnebago and Hinkley and some others of the improved varieties are very large and good for this purpose. Peaches cannot be raised to any extent in this State. In certain localities a few varieties have stood the rigors of our climate, and borne fruit. Where the wood has been well ripened, they will endure safely a temperature of 28 degrees below zero; but where it falls to 30 and 40 degrees below, the trees are killed outright. The fruit-buds are destroyed at 16 degrees below zero; and unless we find some hardier varieties than any we are yet acquainted with, the cultivation of this fruit will not be successful.

As mentioned before, the Siberian apples are profitable to raise for market purposes, and money can be made at raising them for twenty-five to fifty cents per bushel. They are also valuable and

profitable for canning, drying, and preserving, and can be put up in either of these ways at a profit. As the skin is very thin, and readily falls to pieces in cooking, it is only necessary to remove the core and slice, to prepare them to dry. Dried-apples made from the Transcendent and other crabs are regarded as the very best in the market, and will command the best prices. There are so many valuable varieties that it is difficult to tell which is the best; Transcendent, Montreal Beauty, and Allen, are all very nice for drying; the Sweet Crabs for canning and preserving; the Hyslop and some others for pickling, and the Soulard for jellies.

Pears can be raised in some portions of the State, but where the thermometer falls much lower than thirty-two degrees below zero, the fruit-buds are killed and the trees themselves are injured. Some few varieties are an exception to this, of which the Flemish Beauty is the best and hardiest. Where is our friend Kellogg? he can enlighten us on the pear question, as he exhibited some of those "five-dollar pears" at the last fair at Oshkosh.

The apple question is the one which will interest the great majority of our farmers; viz: what varieties to plant? This society has given lists of five or ten varieties as the hardiest and best adapted to general cultivation; but all do not seem to be sufficiently hardy to thrive in all parts of the State. Some localities are much more exposed to the extreme heat of summer and cold of winter than others, so that the difference in the extremes in temperature is sometimes as high as five to twenty-five degrees; and again, the character of the soil is so variable, that the variety which will do well in one place is almost worthless in another; and hence it is an impossibility to give a list which can be relied on in all locations. Experience and observation have convinced us that the list must be regulated by the character of the soil, aspect, intensity of cold, length of time extreme cold continues, altitude above sea and lakes, proximity of large bodies of water, etc. When the work designed to be accomplished by our committee of observation shall have been done, we may be able to determine more accurately what varieties are best suited to the different localities, but in the meantime we must depend on our own experience and observation, and that of those around us.

The following list is made on the basis of hardiness at an extreme of thirty-nine degrees below zero: Tetofsky, Duchess of Olden-

burg; Alexander; Winter Wine; Red Astrachan; Haas; Walbridge; Plumb's Cider; Pewaukee; Fameuse; Tolman Sweet; Fall Orange; St. Lawrence; Ben Davis; Utters; Sweet Wine; Westfield Seek-no-Further; Golden Russet; Perry Russet; Willow Twig. These varieties have all fruited well with us.

APPLE-CULTURE IN WISCONSIN—FAILURE AND WHY! SUCCESS, HOW ATTAINED.

G. W. PUTNAM, ASH RIDGE.

We learn much by experience. Our failures and mistakes often teach a lesson that is never forgotten. The greater evil however is, that after repeated failures we become discouraged and fail to make a proper effort to secure a reasonable success. I have been at some loss to know what subject to present at this time, as the whole field of horticulture has been conned over so many times and the different items of fruit-culture so ably discussed by superior minds, rich in experience, that it is almost presumption for me to think of presenting anything either valuable or interesting to the veteran fruit-growers of this State. The subject I have chosen is one of vital interest to every lover of fruit in Wisconsin, and if I present the same old stereotyped subject it will be from a different standpoint, and I hope may not be entirely devoid of interest to the members of this society.

As failure has been the rule, and success the exception in the greater part of this State, that is by far the greater part of all the fruit trees planted previous to 1873 are either entirely dead or so badly injured that they will never recover, it will be well to first consider what are some of the principal causes of such failure, that if possible they may be avoided in the future. And first I will mention

INCONGENIAL CLIMATE.—I do not consider this the great and only cause of failure in fruit-culture, as many persons think it to be. Approach such persons and ask them to plant an orchard, and their first and great argument is. "Oh you can't raise fruit in Wisconsin; I have tried and I know;" "our winters are too cold, the sum-

mers too hot and dry." Thus they charge our climate with being the great and almost only cause of failure in fruit-growing here, while it is only one of many. It has in connection with other things been a great source of loss and failure in the past, but I trust that by a careful selection of varieties, proper adaptation to location, and proper care, the destruction of trees by climatic changes, may be largely avoided in the future. Another cause of failure is

INJUDICIOUS SELECTION OF ORCHARD-SITES.—Planting trees in valleys, on southwestern slopes of land where the trees are exposed to the fierce rays of the summer sun, exposed to the heat of the winter sun by day, and the sharp and severe frost by night, has been a source of injury to the trees which has contributed its share towards their destruction. Another source of loss has been

UNADAPTABILITY OF SOIL.—We have a great variety of soil in our State, adapted to the production of different crops. Thus very sandy soil may produce a good crop of watermelons and scarcely anything else. Moist mucky or black loam land produces excellent crops of grass or hay, but will not produce fine wheat, it may produce a heavy growth of straw, but the wheat fails to fill well. Neither are all varieties of soil adapted to the healthy growth of fruit trees. Sandy soil lacks the power of retaining sufficient moisture, and trees make but a stunted growth, or if the summer is very wet and hot they may make too rapid a growth and suffer from blight. If they should succeed in producing a healthy growth during the summer, they are much more liable to suffer in winter on such, than on clay or clay loam soil. Trees rarely make a healthy well ripened growth of wood on rich bottom land, hence, when winter comes, they are not in proper condition to withstand severe frosts, and are killed, as unripened corn is killed by premature frosts. In connection with this topic might be mentioned,

WANT OF ADAPTATION OF VARIETIES TO SOIL AND LOCATION.—Some varieties, such as the Siberian family, will succeed where other or standard varieties will be killed outright. Great loss and disappointment in fruit-culture has been the result of not knowing this fact, or by not observing closely what is known in regard to it. Improper selection of varieties has been a great source of loss and failure. Wisconsin, being settled largely by emigrants from the eastern, and now, middle western States, very naturally preferred the choice and valuable varieties that were the favorites at the old

home, but we have learned by dear and perplexing experience that those varieties will not succeed in this State. Consequently, a very large proportion of those early planted trees have passed away, and those who so fondly hoped to eat the choice fruit that was so abundant in New York, Pennsylvania, or Ohio, were sadly disappointed, and many almost or entirely discouraged in the attempt to grow fruit here.

We have had too long a list of varieties. Many an enthusiastic man who has great faith in the productiveness of Wisconsin soil, who has experienced such mild winters as the present one, and has had a laudable desire to vie with other States in producing a great variety of beautiful and luscious fruit, being led on in this direction by the tempting premiums offered by our various societies for the "largest collection of fruit," has injudiciously extended his list of varieties, to be sadly disappointed when some arctic wave came sweeping over our State with its withering and deadening power.

I next come to consider the planting of

IMPORTED TREES.—This topic has some connection with the preceding ones, for when we had learned that hardiness of tree was quite as desirable as fine quality of fruit, and had also learned that certain varieties possessed this desirable quality, and had determined to cut down our list accordingly, to embrace these hardy varieties, it was suddenly developed that the leading nurseries south and east had an abundant supply of these hardy varieties adapted to the northwest, and their agents were busy at work among the people, informing them that they had the varieties just adapted to our climate, and that they could furnish larger and better trees than those grown in Wisconsin. And having convinced the unsuspecting farmer that these varieties were equally hardy wherever grown, the inveterate tree-peddler succeeded in outselling our home nurserymen, and our State has thus been stocked, from time to time, with foreign-grown trees. These trees having been transported a long distance, often very poorly handled, have in very many cases come into the hands of the planter in an entirely worthless condition; others, having come to hand in good condition, and been planted with care, have failed to give satisfaction, making a sickly growth for a few years, and then die, or are dug up to make room for more, it may be, obtained from the same source.

A case in point has recently come under my observation. A man

from central Illinois located near me, wished to plant an orchard, and obtained, in the spring of 1871, some two hundred or more selected yearling trees from Bloomington. They were of the approved varieties for planting in Wisconsin, and very fine trees of their age. Not having his land in suitable condition for planting an orchard, he set them in my nursery, along side of Wisconsin-grown trees of the same age and varieties, some transplanted the same year. They grew finely, and at three years of age were planted in the orchard. Of the whole lot, there is not more than half a dozen of any value, while the greater portion of those grown entirely in Wisconsin soil and climate are now healthy trees.

Too little care has been observed in obtaining trees for planting. Unsound and unhealthy trees have been sent out by nurserymen, often, perhaps, unwittingly but nevertheless unfit for planting with the expectation of eating fruit from them. Trees with bad forks or those that have been so severely cut in the central shoot as to permanently injure them. Such trees are a continual source of disappointment and loss.

CARELESS PLANTING.—Much too little care has been observed in planting trees. The ground is often very improperly and carelessly prepared; holes are hastily dug in the ground; the roots are crowded in and covered with earth, without any regard to the wants of the tree; mulching is neglected. This is often supplemented with

CARELESS TREATMENT.—Sowing the land to small grain, vainly thinking that the ground will thereby be shaded. Cattle are allowed to range through the orchard and if there should chance to be a green twig remaining on the trees it is sure to be found by the stock and unceremoniously pruned off. If the land receives cultivation it is often done in the most careless manner without hardly any more regard for the tree than though it were an oak grub. The tree that receives such treatment, if it survives the first year, may maintain a stunted growth for a few years, and then is pronounced worthless, and nurserymen are arraigned before the public for selling worthless trees, or the old cry is heard, "You cannot raise apples here."

Excessive culture, with too free use of unfermented and strong manures, sometimes is injurious. The tendency of such cultivation is to produce luxuriant growth, continuing late in the season; the

wood not properly ripening, is injured by the cold; dead spots appearing on the trunk or in the forks in spring of the year, seriously injure the health of the tree and lead to premature decay and death.

PRUNING.—Trees are sometimes seriously injured by excessive and injudicious pruning. They are often neglected for a long time and then severely pruned, not heeding the fact that they require a different treatment in a rigorous climate than in one less subject to extremes of heat and cold.

In discussing this subject, I have not presumed to exhaust the several topics, or to even present all the reasons of failure in fruit-culture, but perhaps have omitted to mention causes quite as important as those presented. Enough has been said to show that the occasion of failure is not due alone to the rigors of our climate, enough has been also presented to show that fruit-growing is attended with many difficulties, enough to frighten the timid, and too often to cool the ardor of the enthusiast. The causes are so numerous and the instances of failure so many, that it has become a serious question among the masses whether it will pay to continue the effort to produce our own necessary supply of fruit.

Notwithstanding all the discouragement, the fact still exists, that we can produce fine fruit in Wisconsin. We have positive evidence of this fact at our annual fairs. Allow me to mention an incident. A former prominent citizen of our county and State, but now a resident of Missouri, was at our late county fair; and after examining our collection of fruit, said to me, "I have just attended the state fair of Illinois, and your collection of fruit in Richland county is superior to that exhibited there," which is evidence, either that we can raise fine fruit here, or else that our people had a good tact of displaying what they did produce. The fact being conceded that we can produce fine fruit, the question arises, can we produce enough for our own supply at a reasonable cost? I answer this question affirmatively, and will endeavor now to present some reasons and considerations whereby I think success may generally be attained.

The first thing that naturally presents itself to us is the

ORCHARD SITE.—If we have not planted an orchard, or if we have done so and failed, the first thing to do is to carefully select a suitable site for an orchard. This is a very important consideration,

as we expect, or should do so, that the orchard is to thrive and produce fine fruit long after we have passed away. It is to be considered one of the most permanent improvements on the place, hence it should be on the best location that the farm presents. My ideal of an orchard site is high, reasonably dry, arable land, with natural drainage, clay soil and subsoil, underlaid with lime rock, inclining slightly to east, northeast or southeast, protected on the north and west by a timber belt. If you have not a location combining all these, get as many as you can, always remembering that the timber belts can be supplied by planting rapid growing trees; a double row of Lombardy poplars, planted six feet apart each way, with a row of evergreens inside, or next to the orchard, will make an ample protection in a few years. Where land is generally level I think it best to plant on the highest or rolling portions: but where land is much broken by ridges and valleys, like the southwestern portion of our State, I think it very important to plant the orchard on or near the top of the highest or main ridges, if you would have healthy and productive trees. By planting on high land we secure a more even temperature, both for summer and winter; less thawing and freezing in winter, less scorching sun in summer. We can thus obviate in a great degree the injurious effects of our unfavorable climate. Never plant an orchard on a steep southwestern declivity, and never plant anything but the Siberian and Russian varieties in deep valleys, if you expect to get pay for time and money expended.

After making the proper selection of the orchard site, the next thing to be considered is the proper preparation of soil. It should be continually borne in mind that the orchard is to be a permanent appendage to the farm, and that thorough preparation of soil is necessary before planting an orchard. It can be done better before the trees are planted and if it is thoroughly done, less culture will be necessary to secure the vigorous and healthy growth which is necessary. If the land has been under cultivation for a series of years, and the soil is exhausted by repeated crops, a liberal amount of well rotted or composted (not unfermented) manure should be applied; but if the land is comparatively new, the manure may be omitted, the land plowed thoroughly and as deep as possible, if subsoiled, all the better. If manure is applied, the land should be plowed in the fall, previous to planting, in either case it would be beneficial. As early in the spring as the land is in condition to

work, it should be plowed, the soil pulverized and put in the best tith for a crop of corn. The orchard site should then be platted off into rows each way for the sake of convenience in future culture: care in this part of the work will pay. I should put the trees not over sixteen feet apart if standard varieties, if of Siberian or crab varieties twelve feet is sufficient.

SELECTING TREES.—When your site has been chosen and the necessary fall preparations made, you have then to determine the varieties you wish to plant, and make the necessary selection and purchase. This is a subject of much importance, as your success in fruit culture is largely dependent on the varieties and quality of the trees you plant. If there are any orchards in your neighborhood, examine them, and if possible ascertain the varieties that are hardy and productive, if their are any. If you cannot obtain the necessary information by this means, obtain it from some reliable man who has had actual and successful experience in fruit-culture, and who is competent to give you the necessary instruction. In selecting varieties, confine your selection mainly to a few of the hardiest, choosing largely from Siberian and Russian varieties.

Having determined the varieties you wish to plant, go to the nearest reliable nursery and select sound, healthy trees. If you purchase three or four-year-old trees, select such as have well formed heads or are properly branched, carefully avoiding those that have sharp or bad forks; a low head preferable, if well formed, a high head, better than bad forks. If there is no suitable nursery near you, order only from such as you have good reason to suppose will fill your bill with perfectly sound trees, without any substituting.

A word here to nurserymen. I fear that some of us are, or have been, too careless in regard to the culture and care of our trees in their early growth. By neglecting proper and judicious pruning and training, we have allowed some to form sharp or bad forks or have cut them back severely while young, and thus have sent out injured or diseased trees. A diseased fork or blackened heart, caused by too severe cutting back, are injuries which a tree very rarely or never recovers from. I believe that ordinarily the central shoot of a tree should never be cut back, but that we should endeavor to train every tree with a main or central shoot, with well balanced lateral branches. This can only be done by careful training. With our rigorous climate, great care and pains must be taken to

have the trees that are sent out, healthy. Let us try to grow perfect trees, both in heart and limb, and let us then try and convince planters that they can well afford to pay an extra price for choice trees, as one sound, perfect shaped tree is really worth a dozen unhealthy or badly formed ones.

Having your ground prepared, your trees selected and in your orchard plat, examine the roots and carefully cut off or trim all broken or bruised roots. Have an excavation for the trees of sufficient size to receive the roots in their natural condition, without being cramped or crowded together; the roots having been wet or puddled should be placed in position and covered with fine earth or soil, so that all spaces are properly filled, and pressed down to retain the trees in proper position. When the work is done, the tree should stand two to four inches deeper than in the nursery with a slight mound around the trunk. It is important that the tree should be planted as early in the spring as possible, so that it may secure an early growth, and be thus better able to withstand the midsummer drought and also properly mature the growth of wood for winter. Do not neglect to place a good mulch around your trees as soon as planted, extending as far around as the roots are likely to extend the first year, say three feet on either side. This should be continued until the tree is well established. The mulch acts as a retainer of moisture and an equalizer of temperature, and is a very important aid in helping our trees to withstand the various changes and rigors of our climate.

CULTIVATION.—It is important that the young tree should start in its new sphere with a vigorous and healthy growth, hence it is well for a young orchard that the ground should be carefully cultivated. Some hoed crop, such as beans, potatoes, or corn, if not planted too close to the tree, may be grown without any injury, and the orchard will then be more apt to receive the proper attention. When an orchard has become established, which will be in four to six years, I think it is well to seed it to clover, but enough mulching should still be kept around the trees to keep the soil loose and mellow, thus ensuring healthy growth and fruitfulness.

Great care must be taken to prevent injury to the trees by teams or implements of culture, as it does not promote healthy growth of the tree to knock off the bark with the whiffle-tree, or to ruthlessly draw the harrow over it. The watchful eye of the planter should

be quick to observe the depredations of any insect enemies, and destroy them in their incipiency, and thus save much after labor, prevent great loss if not entire failure. Proper care must be observed to prevent an accumulation of rubbish around the tree that will harbor mice; careful tramping the first snow of the season around the tree will afford protection on this point.

I believe that about all the pruning that is necessary, is to see that all diseased or dead branches are taken off, and all branches removed, from time to time, that indicate a close or bad fork, for if left they are sure to injure the tree.

If the above suggestions are observed, particular care taken in the selection of hardy and well-tried varieties, and adapting these varieties to their proper location and soil, I believe there are but very few persons in this State, who own a farm of even forty acres of good arable land, who cannot raise fruit enough, for at least a reasonable supply for family use. If proper use is made of the knowledge in fruit-growing that we have gained by the experience of the last thirty years, I believe that the day is not far in the future when we shall not only be able to abundantly supply our own State with the best of fruit, but we will have a surplus to export, to supply the deficiency that exists in less favorable locations.

FLORICULTURE.

MRS. M. M. DAVIS, BARABOO.

I cannot hope in this little paper to give you much that is instructive, or even interesting. The subject is a hackneyed one; almost every periodical we take up in these modern times, contains something in regard to floriculture. "Window gardening," "House Flowers in Winter," "What Shall we Plant," etc., have become every day themes, and are we not exhorted in newspaper after newspaper to make our homes attractive, not only by cheerful looks and words, but by every device of ornamentation and embellishment? Less than fifty years ago, botany was considered a very suitable study for young ladies, and that it was so considered, was not complimentary to the young ladies or to science. There has, however,

been a great advance since that period, and some of the greatest scholars of the present day are engaged in investigating the mysteries of plant-life. In our own country, the cultivation of plants and flowers has only of late years received much attention. Within the last fifteen or twenty years much interest in floriculture has been shown by the masses of the people. Early in this period there was a perceptible awakening which has increased until the present time, and now we find almost everybody devoting more or less attention to their culture.

As I go back to the home of my childhood, among the mountains of Vermont, I remember but one home where there was any real pretension made to flower-culture, and what a bright, sunny spot is that in my child-life. It was the home of an old couple who had not much money 'tis true; they lived in a rickety old house, inelegant and uncomfortable in many ways, and they lacked a hundred little things necessary for their comfort and ease that many other homes possessed, yet they were contented and happy. In their only sunny window there was a trailing, coarse, rampant growth of petunias—the white and dull purplish red—old familiars of thirty years ago, from which the rose, lavender, violet, blotched and striped of to-day have sprung. Over their doors, vines were growing. In their little garden-patch, all the old-fashioned garden favorites were opening their blossoms to the sky. While memory serves to furnish pictures I shall not forget this one. They were as ignorant of botany as they were of any other science. But what cared I, that the old lady called her Lilacs “Lalocks,” her Peonys “Pineys,” and her Asters “China Oysters?” “A rose by any other name would smell as sweet.”

The popular study of botany now means more than the learning of the Latin names of plants and the parts of plants, and the becoming familiar with the mythical sentiment and poetry of flowers. I think our greatest need, at present, is a more general dissemination of practical, useful knowledge of plants and flowers, and their culture, adapted to the wants of inexperienced amateurs.

Should I undertake to give you a list of those most suitable for common window-gardening for those who are not blessed with the luxury of a green-house, it would be a mere re-hash of the catalogues. Yet many catalogues go through with a list of green-house or window plants which are really no more fit for window-culture

than the hickory tree or sunflower. The most careful beginner will make many mistakes, but in this, he will find no cause for discouragement. The most skilled has always something to learn. We are obliged to resort to an infinity of ways to protect our house-plants from the influences of a rigid climate, and with some, this is an impossibility. A few hardy, well selected plants, either for the house or yard will give more enjoyment to the cultivator, than a large variety in a neglected condition, and it is astonishing how much at home they are with one who really feels an interest in their growth. Yet many house-mothers say, "It is too much trouble," "I have no time." I know that some things must be crowded out of the possibilities of accomplishment in every woman's case. Let us have a care that it is not the best things that we let go. If she would consider that upon her depends, in so great a degree, the cultivation in those about her of refined tastes, and the "lifting up of the life into something higher than the mere doing of life's drudgery," she would not exhaust all her strength upon those things which are perfectly absurd and useless for her to do. Yet women, over-worked women, who have no time for the cultivation of flowers, or to spend amid the marvels of nature, will patiently sit, hour after hour, stitching little calico patches together, and will continue to do so as long as agricultural fairs offer premiums for such work.

How much better to take a day's pic-nic in the woods, occasionally, with the children. These days, scattered along through the pleasant months, would demand but little time, and would lighten wonderfully the monotony of daily routine, and give a freshness to common pleasures that, because they *are* common, are undervalued. We need to be brought face to face with God in Nature. We become strengthened by it. It is profitable, as Byron says, to

"Go abroad upon the paths of nature,

And when its voices whisper,

And its silent things are breathing the deep beauty of the world,

Kneel at its altar."

I wish I might be able to show that the cultivation of flowers, so far from being too much trouble, will give more value for less work and expense, than anything which can be done or bought to improve the surroundings of a home. It is only because flowers are so plentiful that we forget, or fail to see that they are so surpass-

ingly beautiful. It is strange that anybody can grudge the little cost or pains their culture requires. Winter-bound, as we are for more than half the year, it is something to have a bit of summer gladness in our homes, and it is very pleasant to look upon these bright, fresh plants which greet us every morning with their opening leaves and fresh flowers, assuring us that we have not planted in vain. "After all, what is the real use of all your flowers?" many people say. Not the slightest use in the world to any one who could ask such a question. They seem to have a lesson, however, for some. Prof. Swing says: "I study the flowers of the field, and come home a tenderer father, and a better believer in God." And it is much that this "spirit of beauty" that pervades our work is not left without a witness in the hearts of those with whom we dwell.

PLANTING AND CARE OF ORCHARDS.

A. C. TUTTLE, BARABOO.

I was requested by your secretary to read a paper before this society at this time upon some horticultural subject. I am most certainly a novice in horticulture, compared with a majority of those present, and especially so in essay writing. But I will endeavor to give some directions and suggestions for the use of those contemplating planting orchards. I procured these from observations taken, and remarks heard during the past twenty years of nursery-business in this State.

1. THE SELECTION OF THE SITE.—Have it as near the house as possible, no matter what the soil, aspect, or elevation may be. If it is in a deep, mucky swale, all right. If a stony side-hill, open to the blasting winds of winter and the scorching sun of summer, so much the better, as it is useless for any other purpose, and no choice wheat land is sacrificed. A tree that is all right should grow anywhere and under all circumstances.

2. PURCHASE OF TREES.—It makes little difference of whom you purchase, as every individual nurseryman is a natural and educated swindler of the first water, whose daily study is to trap the unsus-

pecting customer, therefore approach him with your eyes and ears open and a settled determination to use your own judgment in every particular. See all the trees he has before you select, as size is the principal feature sought for; if they have borne two or three crops in the nursery, don't throw up your hat, as he might put on another five cents, but you can chuckle to yourself over your superior intelligence. You must get some of all the varieties he has, as you will get so many more labels, and will have so much more fun in harvesting the crop. "Variety is the spice of life." If you happened to have been born in New England, or some eastern fruit-growing State, where your ancestors have been known to have turned their cattle and hogs into their orchards to consume some of the immense surplus of apples, of course, it is useless for any one in this far-off, heathen country to attempt to advise, as to the best varieties to plant. And when you ask this benighted tree-irate for Baldwins, Roxbury Russets, Rhode Island Greenings, and other varieties of undoubted excellence, and he replies that they are too tender for this climate, tell him you know why they are too tender, it is because he has none of them in his nursery. You will then convince him that he has a sharp man to deal with, and he will be sure to let you have your own way and take just such trees your superior judgment selects.

3. But little need be said about preparation of soil, as you should be governed entirely by the wants of the grain you intend to sow in your orchard.

4. DISTANCE APART TO PLANT.—If you decide to devote a piece of land entirely to orchard, ten feet apart, each way, is ample, as the trees in five years would occupy the whole ground; the dense shade would keep down weeds and grass, thereby doing away with need of cultivation, and the sun could not reach the trunks to scald them, or start the sap in mid-winter.

5. MODE OF PLANTING.—As this is to be done at a time when so much work of more importance is crowding, of course you should follow the most expeditious plan; the following is practiced by many and will recommend itself: Dig a post hole say one foot square, by two feet deep, wad up the roots, and ram them to the bottom, poke in grass, straw, sticks, dirt, or any thing that is handy and will fill up, tamp down thoroughly with a bean pole or fence rail, incline the tree to the northeast, as the sun in the hot part of

the day will fall perpendicular upon the body of the tree and toughen the bark, and by the time the tree reaches bearing size, it would lie nearly on the ground, rendering it much easier to pick the fruit, than if obliged to climb into the trees, or pick from a ladder. Tread the surface of the ground as hard and smooth as possible.

6. **MULCHING.**—This is all foolishness. The idea of placing rubbish about your trees to draw up the moisture, is simply ridiculous. Plant out the trees and let them alone, unless it may be to water them in case the earth appears dry, then carry out water from the well, it would be a little colder to put in a chunk of ice, and pour a pailful at the roots of each tree. Do this just after dinner when it is hot; then you can add this to the long list of kindnesses shown those miserable trees, when the nurseryman sends in his bill, and thereby you can get a reduction.

7. **PRUNING.**—If you must prune wait till the trees are old enough to do it to some purpose. I would advise you to let them alone, unless there are some limbs in the way, then lop them off with an ax and done with it. This eternally working at a tree, following the moony theories of some book-fool, who probably does not know an apple-tree when he sees it, is spending time that should be used in hoeing corn, bugging potatoes, blowing about the weather or chinch-bugs, or something else that will pay.

8. **CROPS FOR ORCHARDS.**—Sow anything you wish, such as wheat, oats, timothy, grass, but hoed crops will prove unsatisfactory, except when your trees are small enough to allow your horses to straddle over them, as it is unpleasant to use a double shovel or cultivator. Barking a tree should not hurt it. It did not, "down east." If it does it is the fault of the nurserymen.

9. **PICKING AND MARKETING THE FRUIT.**—As the price of apples is so small, hand picking is out of the question. Shake them from the trees, and toss them into piles. If not convenient to go to town at the time, a few days sun and rain will not hurt them. If you have an army corps of shanghai, turkeys, guinea-hens, etc., allow them to pick them over, it will improve the looks of the apples. If a twenty-five cent shanghai spoils a bushel of apples a day it is all right, they must live till killing time comes anyway, if they do scratch up all the garden, pick all the small fruit and apples. When you are ready for town, sling from eight to ten bushels into the lumber wagon, and trot them to the market.

10. Let the grass grow around the bodies of your trees, as it furnishes homes for the poor little mice, during the winter. Fence your orchard from your crops so that you can turn in your cattle and sheep. Gnawing off the bark, shortening in the branches, and splitting down the limbs, is nothing compared with the waste of a few spears of grass.

11. PROFITS OF MARKET-ORCHARDING.—It is well enough to spend a little loose change on a few trees, to please the "women folks," or because your ancestors did; but, the man who plants ten acres of good wheat land to three or four kinds of apples, and fusses and fools away his time in following book and newspaper fol-de-rol in caring for them, expecting to market annually, hundreds of bushels of good fruit, at paying prices, must be an idiot, a lunatic, or so immensely wealthy that his greenbacks are a burden to him. Apples grown in this State do not keep any; you may keep the cellar as warm as you please, and pick them over every other day, and they will still rot, and the more you pick, and the warmer the cellar, the more they rot. It is nonsense to compare Michigan with Wisconsin, as Michigan apples are much better than we can raise here, or they have the knack of handling them, or as one man said they know in what time of the moon to gather them.

12. Now, when you have followed the above rule, and possibly many others which I have overlooked, and still fail; when your cattle destroy a tree, or the mice girdle the trees next the roots; when a large limb is split down by the wind, from want of judicious pruning; when the bark-lice have so thoroughly drained the trees of their vitality that the leaves turn yellow in August; when the fruit drops prematurely, from exhausted vitality caused by bark-lice, drought, June grass, extreme cold, or over-bearing the previous year; when the tree becomes diseased from the rap of a whiffle-tree, or the lopping of a branch at the wrong season for pruning, don't forget to take a rest across the fence and fire off all the invectives you can think of, at the nurseryman; he is the sole cause of all your losses.

I will ask if a majority of the unlucky tree-planters of this State have not followed some, if not all these rules. If a farmer should act as idiotic in his care of live-stock and methods of growing crops as he does in his attempts at orchard-growing, his friends would

appoint a guardian for him, and he would not be allowed to direct in any of his business matters. The farmers, as a rule, have arrived at the conclusion that it is policy to house stock in the winter, at least during storms. I can recollect plainly when the rule in Wisconsin was to turn all horned-stock, at least, out to a straw-pile, snow or shine, to shiver and starve. I have hopes that they will progress also in orcharding, till success will be the rule instead of the exception.

They should benefit by the experience of themselves and neighbors; set such kinds, and only such, as have proved hardy through several of the severe winters. There are varieties enough that are iron-clad, and first-class bearers of good fruit. Take these, plant intelligently, in good soil and location, and mulch them; plant hoed crops, and cultivate them, taking full as much care not to injure the trees as you would the corn; prune judiciously and in the right season; fence your orchards to keep out your stock; clean away all rubbish that will harbor mice at the roots; watch for bark-lice, and when discovered, if the leaves are off the trees—if not wait till they are—throw fine ashes into the tree when trunk and branches are wet; hand-pick your fruit, handling as carefully as eggs, taking them to market upon springs, or with straw under the boxes or barrels, and you will succeed in raising large crops of good apples to supply not only our own State, but that large territory to the north and west, which cannot, and possibly never will raise apples.

CRANBERRY-CULTURE.

H. FLOYD, BERLIN.

Cranberry-culture is receiving some attention in this State, but not near what it should or will receive as soon as we become convinced of its practicability and profit. Up to the present time, a large share of the efforts to reclaim and plant marshes with the cranberry-vine, have been largely experimental, and many of these experiments have proved failures, in whole or in part. The causes of these failures are various. Some have planted in grass, which

was not kept down; others have planted in marshes of no depth, with no supply of water to keep them wet, and hence have failed of the wished for or expected results; while others have planted in marshes not adapted to the growth of the plant, or on such as are flowed with lime-water, or are so much occupied with other plants as to choke out the cranberry-vine after it had been planted.

The great enemy of the cranberry is sage, a plant common to all marshes naturally adapted to cranberry-culture. This plant increases rapidly, under favorable circumstances, by sending out stolens when the marsh is dry and in proper condition for the rapid growth of the cranberry-vine. Hence, all lands which are to be planted with the cranberry should be cleared from sage, and nearly so from grass or other plants, especially the small brake or fern that sometimes infest these marshes.

All intelligent cultivators agree as to the importance of scalping marshes that are to be planted to vines. This work is cheaply and speedily done, with a machine which I have invented, if the marsh is firm enough to bear horses by clogging their feet. This machine can be gauged so as to cut from two to ten inches in depth, and from thirty to thirty-four or five inches in width, and with four good horses will scalp five acres per day. These turf scalplings may be turned over, or rolled up, then dried and burned or drawn off in winter to the compost heap. If they are to be burned, the scalping should be done early enough to have the full benefit of any dry time that may follow. When a clean surface has been secured in any way, the vines may be planted. The best mode of planting I have yet discovered, is to cut into the bog with an adze. A spade-blade, shaped to the proper angle and handled, would I think be a good tool to make the cuts with. With either of these tools make a slanting cut, leaving the slice so that it can be raised with one hand and with the other, slide the bunch of vines under and spread them the width of the cut; press down with the foot and the work of planting is done. Vines so planted often push out runners a foot or more in length the first year and look as though they would soon cover the ground, even though planted three feet apart.

It is not absolutely necessary to have these plants flowed until the third winter, unless insects should make their appearance, working or feeding on the vines. In this case the land should be flowed up to the last of May or first of June. This will prevent the first

- brood hatching in any considerable number. This first brood of insects makes its appearance about the middle of May, feeds on sage or vines not covered with water, and grows to maturity, ties itself up in its cocoon and passes the chrysalis state. The last of July or first of August, it often appears in vast numbers, devouring sage and cranberry-plants to such an extent as to almost destroy the entire crop of fruit. But if the marshes and plants can be completely covered with water, it will be impossible for the cranberry insect to become very numerous and destructive, unless adjoining marshes are made nurseries for its propagation, and the millers fly from one to the other. The insect deposits its eggs as freely on sage-plants as on the cranberry, and the young worms feed and grow as fast on one as on the other, hence all natural marshes are quite sure to be stocked with them to some extent.

The question of how the grower can secure an abundance of water, then, is a very important one, since with it, he can protect his vines in the winter (snow is nearly as good if we have it, but is not as reliable), and is also a protection against the ravages of the insect, and a preventive of blight of the bloom or sunscald, which is occasioned by excessive evaporation from the plants during the hottest hours of the day. Hence, when the water is drawn off the last of May, it should not all be drawn from the surface, but a little should be left to supply the plants with moisture and to tone down the air at the surface of the marsh by evaporation, until after the fruit is set, then it may gradually be drawn to the bottom of the ditches by picking-time.

Ditching has two objects in view; to drain the marsh when too wet, and to supply it with water. The drainage ditches should run at right angles with the descent in the marsh, except the main ones. The excavations of the former should be thrown into slight dams to hold water on the higher portions of the marsh in the earlier part of the season; then by damming the main ditches at proper points, we can hold the water, if we have a supply, at any desired height. The overseer of bearing marshes should have accurate knowledge of the stage of water after it is drawn nearly to the surface of the marsh until after the crop of fruit is set, since very heavy and severe losses have occurred, and will occur, if this is neglected; also after this time, in case of freshets, care should be taken to prevent an overflow.

HARVESTING.—Harvesting in this locality commences about the twentieth of September. The best method I know of is the one used by V. C. Mason, of Berlin, manager of Mason & Co's. marsh. He has all of his pickers engaged and booked before he begins picking. He employs a superintendent, who is over all, and is held responsible for the conduct of the employees. He also employs a boss for each thirty pickers, whose business is to take charge of his particular squad, and take them to such locality as the superintendent may direct and set them at work; see that they pick clean, and keep orderly and quiet; also to keep an accurate account of their daily, individual harvest. Each picker is furnished with a bushel box to pick in. This box is made as follows: The two ends are inch boards one foot wide; on the sides and one end of these are nailed, two to three inch by half inch slats, nearly three-eighths of an inch apart, and to secure more firmly, each end is bound with hoop-iron; inch cleats are nailed on the outside of each end to prevent splitting and serve as handles to lift the box with. He begins the harvest with a small force at first, and increases it from day to day as he needs. He first picks strips where he wishes to run the main lines of his railroad, and then the track is laid on these strips. The track is made of two by six or eight inch pine scantling, notched at the ends so as to halve on each other; inch boards are nailed to the bottom of the scantling, covering one-half of the space between the rails and serve as ties. This track can easily be taken up or laid down in sections. All is gathered up at close of picking and housed or piled outside.

HANDLING FRUIT.—The rule holds as good with cranberries as with any other varieties of fruit. The least possible and the more careful the handling the better. The slatted bushel-box if used all the way through serves most admirably in this respect. When they are filled with berries they are set back by the boss and credit given for picking. They are finally gathered up by car men, and taken by rail, on small platform cars, to the store-house by the marsh, and from thence by wagon to their store-house in Berlin.

CURING.—To get the crop to market in good condition is of great importance to the grower. After getting a fine crop of berries, many have suffered in not having sufficient storage and have piled up the berries in such large quantities as to cause the fruit to sweat and heat so as to destroy the enamel on the surface of the

berry, after which more or less of them will commence to rot, and hence cannot be in fine condition when in market. An improvement on this plan is to store them in shallow bins, arranged one above the other, slanting backward and so arranged as to be drawn out from all the bins. But I regard the bushel slatted-box, before described, as far the best way to store. Fruit in this box can't heat or sweat, and the boxes can be piled up like bricks, putting slats on every tier; so that the air can circulate freely among them and cure the fruit perfectly.

A word to growers and cultivators in regard to the varieties. On examination of most any marsh which is stocked with vines, we find a number of distinct varieties of fruit, differing in size, shape, season and in solidity. The best berry is one that has a good form, is early in its season of ripening, solid and meaty, and a prolific bearer. The young grower especially may derive benefit by starting plats of vines, from selections of the best varieties that he can find. I hope we may, ere long, discover some variety, which will excel all our common kinds. The present knowledge of the science of cranberry-culture as practiced by the best growers in the northwest, is very limited, but will continually improve. We need to cultivate a habit of close observation and study, so as to guard against losses and failure.

THE SIBERIAN APPLE—ITS USES IN THE POMOLOGY OF THE NORTHWEST.

J. C. PLUMB, MILTON.

The infusion of the Siberian element into our common apple is an event of great import, and one that we do well to consider in its widest bearings on our future pomology. When we take into account the fact that only about one-third of the area of our State dare plant anything but "Crabs," and at present only the four southern tier of counties feel safe in planting our general list of apples recommended as "hardy," it becomes a matter of grave importance that we, by any and all means, secure a race of apples that will extend this area of success to its farthest limits, even to

the remotest corner of our State; and, especially, to supply the great agricultural and timber regions of central Wisconsin with safe and sure apples.

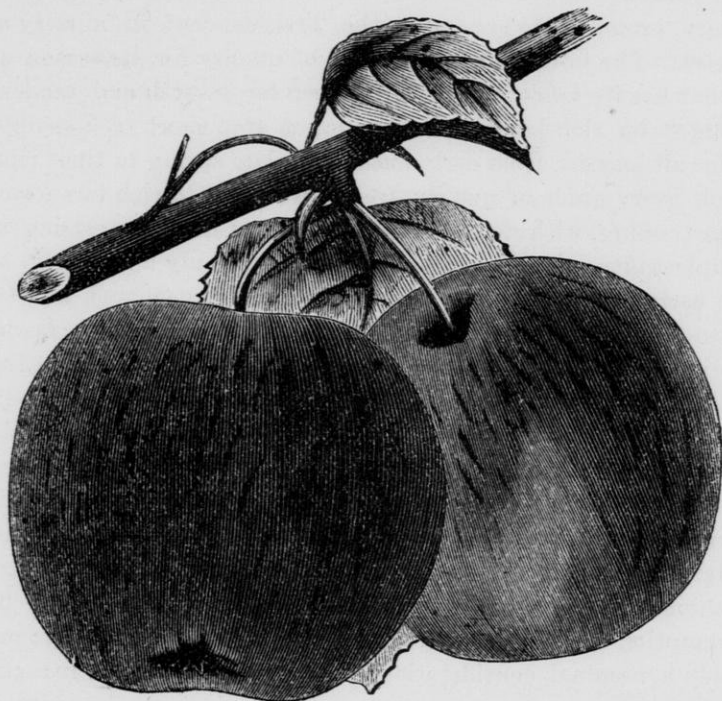
Our present race of choice apples proves quite satisfactory for the southern portion of the State, but in view of the destitution of so great a part of our commonwealth, we should explore every avenue promising improvement in the direction of adaptation. The entire effort of pomologists for the last century, both in this country as well as in Europe, has been in the direction of *quality* of fruit. These efforts have been a success, for better apples could not be desired. But the process of refinement of fruit has also been one of weakening of physical structure, and we of the northwest must go back to first principles, and infuse the northern element into our fruit-trees, as we have done in our people. In our pomology we are restricted to comparatively few of the hardiest varieties for general culture south of the forty-second parallel, while above that, the case seems yet hopeless for any considerable number of our common apples to flourish. This leaves the great northwest fruitless, so far as home-production of the apple is concerned. This experience has been burned into us by great and severe losses of trees, both to the nurseryman and farmer. But with the advent of the Siberian family comes hope. Its special qualities of vigor and hardiness, early maturity of wood, and early fruiting, give it especial value in its purity, or as a fertilizer in the production of hybrids. It is especially valuable in this respect for its concentrated character, firmness of wood, and rich juices.

ORIGIN.—Of the origin of this species we have no very positive knowledge, but while the *Pyrus Malus*, or common apple, came from southern Europe or western Asia, the *P. baccato*, or Siberian family evidently had a northern origin. The evidence of this is more internal than historical. Our best historians cannot trace the improved apple to its transition from the native crab of Europe or Asia, nor the Siberian family, as we know it; showing that the amelioration of a species from its native wildness may be, not so much a gradual change, as a sudden impulse or "sport," which breaks over all previous rules of transmission. However this may be, we now find this species a most valuable adjunct, not alone from its inherent concentration of power, but from its possessing so many good points in its general make-up.

IMPROVEMENT AND PROGRESS.—Whatever may have been the origin of the Siberian family as we know it, we find it especially adapted to our purpose as an improver of species, being a strong impregnator of the qualities before named, giving a concentration of good qualities beyond any other available source. The progress of improvement has been hitherto very slow and uncertain, as if by accident. Our quick summers and warm autumns have exerted a genial influence, apparent in the improved quality of the old varieties as grown in the west, but under the process of hybridization does the special value of this species appear. This process has, we think, been used back-handed (*i. e.* from female to male), looking to the product of Siberian seeds for the improved variety. The chances for improvement this way are almost nothing, as the early bloom of the Siberian family secures self-impregnation before the flower of the common apple appears. Reverse this process, and we have the chances largely in favor of securing impregnation of the common apple from the more advanced pollen of the Siberian that is grown or brought in proximity to it. Therefore, instead of planting crab-seeds, plant from the most desirable apples grown near the Siberian, and look for improved quality in the product. We do not propose here to discuss the many intricate theories of "improvement of the species," but refer to this one point as essential in this line of improvement. This subject opens an interesting field of experiment to the careful student of "art in nature."

With the advent of the Transcendent and Hislop came the hope of still further improvement in that direction, to meet the demand for all seasons and flavors. This increasing demand has stimulated every enterprising member of our profession to active search for something new in this line, and large numbers of new varieties have been brought to notice. Previous to 1868, none of our standard authors gave this family more than a passing notice, as "for ornament and preserves." In this year Dr. C. Andrews brought his "Marengos" prominently before the public, and gave an impetus to this new feature of fruit-growing. Since, yearly additions have been made to the list by various persons, each claiming merit, and onward progress has been made until all the old favorites have been discarded except the Transcendent which still stands as a test of quality for cooking. The Brier Sweet and Sylvan Sweet are the first pure sweet sorts, of good size and texture, brought out, and they well meet

the universal demand for this class, but we need still, the pure sweet hybrids that will go with our sub acid and tart varieties through autumn and winter.



LAKE WINTER SIBERIAN.

Fruit medium to large size; round, very smooth; pale yellow, mostly covered with bright blush or stripes; stem slender; cavity small; calyx closed, in shallow basin; core and seeds small; flesh fine grained, firm, juicy, sub-acid, becoming nearly sweet in spring; entirely free from astringency or "crab-taste;" excellent cooking or eating, from October to March, keeping well through winter. It is a beautiful, free grower, resembling the Fall Stripe or Saxton, of which it is a seedling, fertilized from the old large, red crab, grown from seed planted about 1855, in Jefferson county, Wisconsin, from fruit grown by J. C. Plumb.

Among the most promising new varieties are those brought out by Mr. Peffer and Mr. Putnam, of our State, and some very promising ones from Minnesota. We need not enumerate the many very worthy varieties known in the west, for at the present rate of improvement the favorites of to-day may be displaced next year by the close scrutiny of the public taste and professional interest of growers. Our own careful observations of over two hundred varie-

ties brought to notice as "worthy," concludes that not over one in ten can hold a place in general esteem. Of our own favorites the "Lake Winter" holds the first place. (See description herewith.) Our "Milton," now, after twenty years fruiting, and four years in nursery, promises to supersede the Transcendent in nursery and orchard. The latter is our standard of quality for its season and use, but has its weak points in its irregular growth and tendency to blight on rich lands. We shall not stop short of a complete list for all seasons, from early autumn to late spring in their ripening; of every grade of quality, from pure sweet to rich tart for eating or cooking, with rich, firm flesh, juice free from any astringency or unpleasantness. The trees should bear young and freely, and have early maturing wood; be free, smooth growers, and not subject to blight. All these qualities should be found in our favorite Siberian Hybrids. Large size is desirable, also high color, but these qualities are not so essential as those before named.

USES—The manufacturers of jelly tell us that the native crab is superior to all others for that purpose, and the Transcendent next. All know how refreshing and healthful is good acid fruit in the spring time, and none is more easily grown and kept than our best winter Siberians. The very sweet and sub-acid varieties will give a combination to suit any taste without the addition of sugar. The consumption of fruit, in general, is limited only by the supply; price is only a nominal consideration. Twenty-five per cent. reduction in price will generally increase the consumption one hundred per cent. if there is a supply, and the better class of Siberians are no exception to this rule, bringing equal or better prices in all our markets with the best of apples. But these are only secondary considerations in the question before us. The immense extension of the area of successful apple-growing is the main point of this paper. The use of Siberians and Hybrids promise much, and is working grandly for this end.

I believe in "home-grown fruits" for every land and clime where it is fit that man should dwell, and I confidently predict that though this injection of the Siberian "blood" the area of apple-growing will be extended from two hundred to five hundred miles further north, and from the great lakes to Alaska's range.

OBSERVATIONS OF A NOVICE.

A. L. HATCH, ITHACA.

“ Home is not merely four square walls,
Tho' with pictures hung and gilded;
Home is where affection calls—
Filled with shrines the heart hath builded.”

There is no nobler employment of the human heart than that of home making. The creation of home, that center of attraction from which radiates an influence that ought to elevate the character of all mankind, tends to develop the better qualities of human nature. Of all home attractions none are purer or more cheering in their tendencies than those offered by horticulture, and nothing in horticulture is more satisfactory than successful fruit-growing. No rural home is complete without its complement of fruit, and very few persons of refinement are contented with homes that afford none of them.

The effort to grow fruit is commendable and should receive encouragement. No encouragement is more valuable than that from experience which teaches the true method and correct philosophy of management. Popular management is not always correct, because it is not always based on philosophy. The diversified nature of our country gives a wide range of different circumstances, and our climate is such, that to be successful, management must be philosophical. Experience from different sources may appear to show conflicting results and seem puzzling to the novice.

FRUIT IN POOR PLACES.—The Wisconsin Horticultural Society would do the country a good service, if it could teach the public how to manage fruit on poor sites, to insure the fullest success. Many farm are without good sites, and as most farmers plant near their dwellings, there is often no choice, but to grow fruit on such sites or not at all. The Bailey Sweet apple is by no means as hardy a tree as the Hislop crab, yet the former may make a better tree on a good site, than the latter on a poor one. There are very few places

however, but where a Transcendent can be grown. Of course, it is desirable to know what can be grown, even on the poorest sites, but it is also desirable to know how to grow the hardier varieties, such as the Duchess of Oldenburg apple, in such places. Some places may be so poor as to defy the efforts of the planter. There are few places, however, not capable of improvement.

NATURE'S AGENTS.—The first correct step to obtain horticultural knowledge, is to study nature. Nature's agents are everywhere present, and one of her most potent workers is sunshine, exerting a compound influence of chromatic, calorific, and chemical powers. Heat is one of the most tangible of these immaterial agents. Measured by the thermometer, it shows many interesting features, not so much in the averages as in the extremes. One summer day when the thermometer showed ninety-five degrees above zero, in the shade, we placed it in the sunshine, and the mercury quickly rose to one hundred and twenty degrees above. The surface of the earth was burning hot where clear of vegetation. Vegetation was wilted and scorched where the ground was not in good tilth. A drought prevailed, and fruit-trees were struggling vainly to supply from the hot, dusty earth, the vast amount of moisture evaporated from their leaves by the sultry winds and burning sun-heat. Where apple trees were given clean culture, the sunshine was pouring in full force upon the ground about their roots. The earth was parched and hard, super-heated many inches in depth. Where were the roots of the tree? Were they near the surface in this over-heated soil, endeavoring to draw moisture from it, or were they down deep in a cool hard-pan of clay and flint-stone? How was the foliage of the tree? We are told that apple trees finish their growth in length of limbs, or should, by the middle of July, when all the leaves have expanded. Then, at the time of our observations, we should have found the trees still growing, new wood forming, new leaves expanding. Examination showed, however, that the foliage was suffering from the merciless heat and excessive drought, and the growth of limbs was prematurely checked. New and tender leaves were scorched and drying. Along the tips of the limbs for six inches, scarcely a perfect leaf could be found, and the buds at the base of each leaf-stalk were imperfect. These leaves should have perfected the buds and these should have expanded next year to grow new leaves, branches or

fruit-spurs. They had suffered so much, and were so imperfect that they did not expand the next season, and the foliage was mostly borne on the new growth of wood. The tree having lost a great deal of vitality during the drought, was stimulated by fall rains and warm weather to make a second growth, instead of maturing the first, as it should, and went into winter with impaired equilibrium. When the mercury congealed we remembered how the poor tree had suffered during the drought, unprotected by a mulching that could so easily have been supplied from the rotting straw-pile near by, and while the forest trees, not far away, were luxuriating with their trunks in their own cool shade, and their roots nestling down among myriads of moist, decaying leaves—natures mulching. We knew the fearful cold would tell on the tree, not only that its breath was from "Greenland's icy mountains," but that the Sahara heat of summer had weakened its vitality and lessened its power of endurance.

RUSSIAN APPLES.—There is no feature of practical fruit-culture of more interest than that of varieties. For this climate the introduction of hardy varieties, or the originating of them, is a subject of importance. In 1870, the United States Department of Agriculture imported from Russia, cions of four hundred varieties of apples. No information has been given to the public concerning them, except the names of the varieties. We have about one hundred of these growing, but when can we fruit and test them? We may learn of their hardiness as nursery trees, but to learn of their fruiting properties, their desirability, and hardiness as orchard trees, will require years of labor and waiting. Why cannot information of them be obtained from Russia? The cions were imported from St. Petersburg, sixty degrees north latitude. Now what kinds, if any, grow there, and to what degree of cold are they subjected? We can only surmise the season of some of these varieties by their names. Some of them will doubtless prove of value, but which ones? An intelligent man visiting Russia could learn much of these, and other fruits that would be of value to us here. Your society would do well to take action in this matter, and urge it upon the attention of the Department of Agriculture. If the Government will not take measures to secure this desired information then let the society put it afoot, and we presume it will meet

with assistance and approval from the horticultural societies, nurserymen and fruit-growers of the northwest.

HYBRID APPLES.—Another strain of varieties of importance is the many new hybrid Siberians. Most, if not all, of the varieties now introduced to the public of this class are from crab seeds, and their hybridization, the result of natural causes and not artificial assistance. We know of none from seed of the common apple. The use of crabs for the production of flowers to be used as pistillates in the production of new hybrids will doubtless give a different strain of varieties from what would be produced if they were used as staminate upon the common apple, and those seed used. If the Transcendent and Duchess are to be used for this purpose, and we believe them both excellent subjects, it would be desirable to have seeds of the Duchess grown from flowers fertilized with Transcendent. In this way a class of varieties might be produced of an entirely different strain from what we have, and would probably embrace some excellent features not found in others.

RANDOM NOTES.—We think the apple grown near Portage, under the name of "Fall Spitzenberg," is identical with some grown in Crawford county, by a Mr. Kinder, and called by him, "Rambo." Neither name is, perhaps, correct, but it is a good tree, and ought to be looked after by the society to ascertain its true name. We have some trees of the McMahan's White, originated in this country, that have endured the cold for several years better than Duchess on the same site. We think very highly of it.

We set a few Janesville grape vines two years ago, and some seventy-five last spring. The former bore last season, and ripened perfectly. From what we have seen, we like it very much, and shall plant more of it, as we think it practical.

The season of 1875, though not a fruitful one, has given us the best reviving growth on apple-trees that we have had for several years. Trees made a seasonable growth, and most of them had good foliage. Drought did not hurt them, as in several seasons past, and they seem to be more fully invested with vitality. Should the temperature become as cold as last winter, we do not think trees would suffer as great injury. Fire-blight was not so severe as in 1874, and we think may not occur at all next season. We hope it will not, and we look forward to the Centennial year with full expectation of seeing fruit-culture assume an encouraging look.

CULTIVATION OF THE GRAPE-VINE IN WISCONSIN.

R. J. HARNEY, OSHKOSH.

At the outset I may be permitted to make a few remarks on the general usefulness and benefit which would result from the investigation, by this association, from the practical stand-point of intelligent experience, of the manner in which vegetable life is influenced by local, climatic causes, and other physical characteristics, and by the interchange of such information as may contribute to a comprehensive knowledge of the best methods of culture, and the specialties, which are best adapted to our soil and climate. No other subject can equal this in general importance. The culture of the tree and vine has, necessarily, a more intimate connection with climatic conditions, and involves a wider and more comprehensive range of observation than that of field-crops. The trees become, as it were, the children of the soil—permanent occupants. Exposed to the cold and storms of winter, as well as the more genial influences of summer, as the years go by, climatic effects are written in their history. They are a yearly record of the character of the respective seasons of their existence; and those engaged in their cultivation and growth, can thus obtain a practical knowledge, which is of great general value.

The cultivation of the apple and other fruit-trees in the northwest, has, through a long series of years, been attended with the most disheartening results, and while a partial success has been attained, the belief generally prevails, that their successful culture is to be limited to favored localities alone. But the very features of our climate which are unfavorable to the apple tree, viz: a bright and dry atmosphere, occasioning rapid evaporation, are highly conducive to the healthful growth of the grape vine, and the production of its fruit in the highest perfection. The soil too, in almost all localities, abounds in the elements essential to its health and fruitfulness, and the summers of southern and central Wisconsin are sufficiently

long to fully ripen its fruit; while fifteen years of very general cultivation have demonstrated the fact, that the choicest varieties of American grapes can be cultivated here with the highest success. This result has been attained, too, under a prejudicial opinion operating against it, that the climate was too cold for the cultivated grape vine, and that American grapes were too inferior in quality to make them a desirable fruit. Now the luscious Delaware, Roger's Hybrids, No. 3., Agawam, Wilder, Salem and Walter, rival, in point of excellence, many of the European varieties, when they are ripened in perfection; and throughout a large range of territory in this State, they fully ripen about the middle of September, while in four seasons out five, there is no frost hard enough to injure the foliage until the first or the middle of October. The first slight frosts do not affect the vine, and it will withstand without any visible effect a degree of cold that will kill the tomato and corn. Contrary to the general belief, it is not a child of the tropics "native to the manor born;" although it grows there in many places of high altitudes, yet it is most at home in the temperate zone, and flourishes the best, and produces the finest quality of fruit, north of the middle line of the belt of the grape region.

There is no other fruit that grows so abundantly throughout so wide a range of territory, soil, and climate. Like the honey-bee, it seems to be the constant companion of the inhabitants of the north temperate zone, south of 50 degrees north latitude in Europe, and 45 degrees in America. It does not grow in India, nor in Arabia, and is indigenous to a much wider range of territory in America, where it is more frequently found in the altitudes of the tropics, than in Europe or Asia. In North America, it is very generally found throughout the whole region south of 45 degrees, with a great number of varieties adapted to varied locations. The almost universal presence of wild vine in great variety, some of them in the most favored localities producing a very fair fruit, would indicate this to be the natural land of the vine; notwithstanding the prejudicial opinion to the contrary, founded on the fact, that European varieties, which through successive ages of change and adaptation have conformed to the climate of their nativity, would not succeed here to any general extent; and it may be well here to remark, that persevering efforts in propagating from acclimated European vines, are now producing very hopeful results; as succes-

sive propagation on this fertile soil, and stimulating climate, adds to the vigor of many European varieties. Hybridizing has also produced varieties that in fruitfulness, vigor, foliage, and quality of fruit, equal some of the esteemed varieties of Europe. The fruit of the Salem is essentially European in its qualities, and the Wilder, the best of all our black grapes, is a close approximation. They are both very pure, with no malic acid, and soft pulp, and rich in saccharine qualities when fully ripened.

It is only of late years, that the cultivation of the vine has received any considerable attention in this country, and the progress that has been made, in the last twenty years, in improved varieties far surpasses any thing of the kind in any other country in a period of similar duration. Twenty years ago there was practically no culture worthy of the name; but now, American grapes take high rank, and have only just commenced the ascending scale of improvement. No other plant so readily changes its character, conformable to the climate and soil of a country, and yields new and improved varieties with such facility of reproduction; and nothing yields more plially to the dominion of man, or more gratefully responds to his kind treatment. Under his training hand it assumes whatever shape and size suits the demands of his convenience or taste, and yields to him the most abundant reward for his labor.

It is one of the most prolific, and the most beautiful and valuable of all fruits. The graceful and fruitful vine, has ever been the emblem of grace, luxuriance and abundance; the theme of the poet in all ages, and historically associated with the whole existence of the human family. Its cultivation is of great antiquity. Humboldt found varieties of the vine now cultivated in Europe growing wild on the banks of the Caspian Sea, and in Armenia, which countries are believed to be its native place; and it still shows its proclivities for a dry, bright, pure atmosphere like ours.

The Romans planted it in the Rhine country, and in England, during their occupancy; but the climate of England is too moist for general out-door culture, and the heats of summer are insufficient to mature its best qualities, although the winters are mild; while in the altitudes of Tokay, in Hungary, where the soil freezes to the depth, sometimes, of two feet, but where the summers, like ours, are bright and warm, and the air pure and dry, it flourishes

in a most luxuriant and healthful growth, and produces, with the regularity of the seasons, the very choicest and most valuable fruit, thus showing its inherent instinct for the bright climate of its nativity. It is, however, a great emigrant, and has followed its early cotemporaries, the Caucassian race, in all their varied wanderings from the parent nest.

The vine in Europe receives the most careful culture, and is there the most remunerative crop. There are, even in the districts most favorable to its growth, occasional failures, and diseases and enemies to combat. The disease that most prevails, and that is the most dreaded, is the oidium, a parasitic fungus, which prevails more in the warmer districts than in the northern and cooler ones, and is now one of the most serious obstacles that grape-culture has to encounter in that country. The dry, pure air of our State, and cold winters, are well calculated to resist it, and to create a healthy foliage which is essential to successful culture.

The immense value of the annual crop in Europe is almost beyond belief. According to official statistics, there are over twelve millions of acres devoted to its culture, producing yearly a crop worth, on the ground, from \$800,000,000, to \$1,000,000,000, nearly one-half the amount of our national debt, and as a branch of agricultural industry, is said to be "only equalled by the culture of rice, which forms the staple article of food, for one-third of the human race, and also that of wheat."

Can a good quality of this most desirable fruit be produced to any considerable extent in our State? The facts I have given in the history of its cultivation, all serve to show that it is peculiarly adapted to the southern half of our State, and the practical experience of fifteen years culture, of varieties of the greatest excellence, confirms it. Grape-growing is no longer an untried experiment with us, for the Delaware, Agawam, Wilder, and Salem are brought to a perfection here that is not generally reached. The originator of the Walter, Mr. Kaywood, told the writer that he never saw elsewhere such luxuriant foliage on the Delaware, and such a splendid profusion of fruit as in the vicinity of Lake Winnebago and other parts of Wisconsin; and it is the remark of all, who have had experience, that the climate of Wisconsin is conducive to a healthy and luxuriant leaf, an essential requirement of grape-growing. The Delaware particularly, that is so precarious in

many places, luxuriates in this climate and soil, and the same may be said of the other choice varieties. The fact is, we have been raising grapes here that would be pronounced good even in critical Europe, but it is also true that in too many instances the fruit is plucked needlessly before it is ripe, and is frequently injured by improper management in the cultivation, such as over-bearing and injudicious summer-pruning.

Our average summers have sufficient duration of heat to develop the fullest amount of saccharine, where the vine has the proper exposure, soil, and cultivation, and our dry autumns are particularly favorable to the process of the elimination of water from the leaf during a critical period in the formation of fruit.

METHODS OF CULTURE.—In the brief space of such an article, a general outline only can be given. The practical details must be learned by experience. As the vine in this climate must be protected in winter, the culture and training must conform to this necessity, and it is no drawback to remunerative success, since, in one of the most favored grape-growing regions in the world, the vines are taken down and protected, during the winter. It is not a very expensive process, for when the vines are pruned, one man can cover one hundred and fifty to two hundred a day. This also prevents the vines from a too early start in the spring and exposure to frosts, securing them from the uncertain contingencies that affect many other fruits. It should be borne in mind that there is no plant-culture so intelligently conducted as that of the grape, and the results of which can be so accurately estimated. While it is the most remunerative crop grown from the soil, and a healthful and pleasant labor for even women and children, one in which they can acquire a most intimate knowledge of the processes of vegetable life, it is no slovenly and hap-hazard system that will succeed. Neither is there any mystery or difficulty in its practical operation.

SOIL AND EXPOSURE.—The first things in importance are proper soil and exposure. The vine flourishes in a great variety of soils, but a subsoil of limestone seems to be its favorite here. It does remarkably well on light clay soil, but must have good under-drainage. Unlike the apple tree, it covets a southern exposure, sunshine and a bright, pure atmosphere. As the vines must be laid down in the fall, they should be grown from the ground at a sharp

angle. This is important, as it facilitates the laying down of the vine; it also helps to check the rapid flow of the sap, and induces fruitfulness. The flow of sap to the fruit-buds, is better conveyed to them in a horizontal position. The whole piece of ground ought to be worked to a good depth with a sub-soil plow; no deep trenching or digging is necessary. Delawares planted eight feet apart, and Roger's Hybrids, and other strong growing varieties, ten to twelve. The roots of the vine should be planted eight inches below the surface, and the ground kept well worked, as in the cultivation of corn, and its fertility maintained by judicious manuring. It is a great error to think that the vineyard needs no manure.

TRAINING.—The first year, it is best to let only one cane grow, leaving all the laterals from it to make an undisturbed growth. Cut this cane back in the fall to three or four buds. Two canes only should be allowed to grow the succeeding season, if the plant is sufficiently strong; if not, only one, and cut that back in the fall as in the previous year. Two canes are grown the third year, and cut back to four or six feet according to varieties, and the laterals all cut off; these, in the spring, are tied horizontally to the lower trellis bar. The buds at each joint form fruit-bearing shoots, and these, as they grow, are tied perpendicularly to the trellis. The lateral branches of the fruit-bearing shoots are checked by pinching off the ends, and the shoots themselves pinched off two or three leaves beyond the last bunch of grapes. The growth of the upright cane is stopped, by pinching off in August. A little practical experience and observation will enable anyone of ordinary intelligence to understand and practice this. In the fall, the fruit-bearing canes are cut back to three or four buds, forming what are called spurs; two canes are grown from each spur the following spring, and these cut back as in the previous season, and this system is followed from year to year. There are many other methods of training which can be easily learned by a little experience. The whole surface of the ground ought to be worked and kept loose to the depth of four or five inches, and no roots suffered to grow from the vine within that distance from the surface. The choicest varieties can be grown about as easily as the common ones, producing as large crops, that will bring twice the price in the market.

The grape is not a very perishable fruit, if carefully handled. Picked from the vines in shallow boxes in dry weather, the Dela-

ware, Roger's Hybrids, Diana and others may be kept sound in a cool, dry place, till April. The fruit is in much demand in the winter, and is especially valuable to convalescents, when perfectly ripened. But comparatively few persons are aware of the fact of the valuable properties of this fruit as an article of diet for invalids, or persons in ill-health. The greatest pains are taken in some countries to provide and preserve in a fresh state, well ripened grapes for the delicate and infirm, and physicians always recommend their use. It is the most nutritive and wholesome of all fruits, containing more saccharine than any other, and has no injurious acids when fully ripe; the only acid of any amount being tartaric.

Every family having a garden spot of suitable soil, ought to raise a plentiful supply for home use at least.

The yield of the grape is large; from six to ten thousand pounds per acre. Its culture in America has received a great impetus from the introduction of new, choice varieties, and all interested in our State must rejoice in the fact that Wisconsin has had a practical success in grape growing, that promises the best success.

HORTICULTURE IN THE NORTHWEST.

C. ANDREWS, ANN ARBOR, MICHIGAN.

The invitation to meet with you and join in the discussions at your meeting, recalls many pleasant associations of the past, but finds me further away from your city than formerly, but still, not out of the region that may be properly called the great northwest; horticulturally, however, I find my "environments" considerably changed. The peach and apricot are now showing an abundant supply of uninjured fruit buds; a sight I have not seen since 1868, when, at Elgin, Illinois, Jack Frost, and Old Boreas bore down upon the "maiden orchard of my hopes," and at one fell swoop destroyed it root and branch. It then contained bearing specimens of fine peaches, apricots, plums, nectarines, and nearly all the "high-blood" cherries, from the Yellow Spanish to Kirtland's Mary; and what, if possible, I regarded as a still more serious disaster, it destroyed my initial orchards of apples, one at Elgin, one on Wash-

ington Island, at the entrance of Green Bay, and one at Green Bay City. Out of two thousand Baldwin, Rhode Island Greening, Roxbury Russet, Northern Spy, and Belmont apples, not a score survived to become bearing trees. The vicissitudes of fruit-growing in the northwest since 1850, 25 years ago, need not be recounted. But to a close observer, one result is evident. The reverses which have overtaken cultivators of fruit "west of the lakes," has had a tendency not to repress advances in horticultural knowledge, but on the contrary to stimulate them. The region of northern Illinois, Iowa, Wisconsin, and Minnesota, to-day contains, in my opinion, a rural population, as a class, better informed upon the leading topics of pomology and the art of horticulture, than the same classes, either in western New York or Michigan, where the obstacles to successful fruit-culture, are not near so numerous. If the solution of this apparent anomaly is sought, it will undoubtedly be found in the well recognized principle that obstacles to the success of any necessary pursuit of man, when not too formidable, always acts as stimulants to energy, and to intellectual development in that direction.

Thus the principle of compensation, or as the philosophers would say, "correlation of forces" has been at work in the northwest, and what the people of that section have lost in one direction, they have gained in another. Not only has the result been to sharpen the intellects of all classes in discovering and testing new varieties that might take the places of their old favorites, but the practices and processes of culture have been improved. As a rule, more care is taken of the orchard by northwestern farmers, than is done in Michigan, as far as my observation goes.

In choice of location, and selection of varieties, the planter in the former section is obliged to be informed, though often his knowledge has been gained through repeated disasters. But the causes of these disasters has given rise to close study and combined investigation, and one prominent cause, no doubt, of the high character and numerous attendance at your annual meeting, has been the fixed determination of an energetic race of men to overcome the difficulties that lie in the path of an improved and successful horticulture. And it is more than probable, that if the possible productiveness of the orchards of Wisconsin and Michigan could be compared, the loss from neglect and want of intelli-

gent selection and culture would prove far greater, in proportion, in this highly-favored fruit State, than in the former. And this is not intended as allowing you to lay "that flattering unction to your soul," that there is not a vast amount of neglect and ignorance in the care of orchards in your own State. But in this State it seems almost generally to be taken for granted that the orchard is a mere side-issue, a thing which, when once planted, is expected to take care of itself, and, indeed, ought to ask pardon for ever being in the way of the plow, the cultivator, the mower, and the hay-rack. It is looked upon as a mere usurper of the soil, which is needed for other crops which the owner persists in taking off from year to year. The young tree is regarded as an organism endowed with such wonderful vitality and recuperative power, that it can be run over by the harrow, barked by the long whiffle-tree, nicked by the sickle-blade, nibbled by sheep, rabbits, mice, or perhaps twisted and rubbed by neat cattle, and still be able to heal up all its own wounds and go right on growing, just as though nothing had happened to it. And, what is far worse, if possible, for the poor, suffering tree, it is left exposed to the influence of our fierce "sou-westers" till it assumes an angle of forty-five degrees east by northeast, and in that position, summer and winter, is compelled to receive the full force of the sun's rays upon its bare, blistering trunk, producing hideous burns and scalds which become cancers and poison the vitality of the whole tree. I have been struck with the frequency of this unsightly and ghastly condition of orchard-trees in this State, and think it is even more general than among you. And not one in ten of the farmers, I ought to say boors, who allow this condition of things, seem to know that it is the wind that causes their trees to lean, or the sun that burns them on the southwest side. "O!" they exclaim, "this is not a windy climate like yours." But when the diseased and dying condition of their trees is pointed out, and their evident disposition to "go east," as though to escape from such cruel treatment, you hear the almost universal and stolid reply, "somehow trees don't seem to do as well as they ought to." The men are not doing as well as they ought to; that is the secret. They have cut away the forests and have not replaced them with belts; they systematically abuse and neglect the trees; exhaust the soil upon which they stand by taking off grain and grass-crops, and then, because the trees do

not flourish and yield abundant crops of fair fruit, they set it down to the fault of the seasons or the "bugs."

The rigorous climate of the northwest has obliged farmers to be more careful of the *feelings* of their trees, more tender in the treatment of their diseases and in the supply of their wants, and in this they have reaped a double reward; they have secured, if only a scanty supply of fruit, yet an equivalent in a higher culture and refinement resulting from this very care and study and skill, which they here found it necessary to use; "A merciful man is merciful to his trees." No man of culture or refinement can neglect either his trees or his beasts, and the necessity of caring for them is sure to make him a merciful, and therefore a refined man. The folly of expecting an orchard to yield fine fruit without being fed or shielded from adverse weather, is as gross as that of expecting a colt or a litter of pigs to "turn out well" without hay, or corn or cover. Last week I met a man who said he was "about discouraged planting trees." Why? He had lost a hundred fine bearing trees out of an orchard of three hundred. He had sown the whole to rye; on a part, the rye did not catch well, so he plowed it up in the spring and planted potatoes and beans. The rye grew very tall, but every tree in that part of the orchard winter killed the next winter, while those in the rest of the orchard were uninjured. "The ground froze up dry" he said, was the cause of it. The dry brains of the owner and the robber rye was the cause of it. This man's profit and loss account stands thus:

One hundred bearing apple trees at \$10 each.....	\$1000 00
PER CONTRA.	
One hundred bushels rye, at \$1 per bushel.....	100 00
Balance.....	<u>900 00</u>

Items like this can no doubt be found in the account of hundreds of farmers, who are cursing the climate and the droughts, anything but their own dull intellects and greedy dispositions, as the cause of their losses.

But I must not close this hasty but already lengthy paper, without referring to other topics suggested by my change of residence. One of the greatest losses, financially, to all sections, is the lack of caution and of security in procuring the best varieties, both for productiveness, use, and for marketing in each season. The system of

buying and selling nursery-products also seems to call for discussion in your "solemn assemblies." I have lately advocated, through the press, a system which, in some respects, is an innovation upon the common plan, and at the risk of offending the vested rights of tree-dealers, I will here allude to some of the features of this plan of selling trees by sample.

Whatever may be said to the contrary, this system is just as practicable in selling the leading nursery products as it is in the sale of most kinds of merchandise. It is a system which will redeem this branch of business from the uncivilized practice of besieging every man's home with a horde of hungry canvassers, with their gaudy pictures and oily tongues, to "talk" him into buying; a custom which the country gentleman, who truly respects himself, will not encourage. But he will visit, either his local nurseryman, or an established and recognized dealer in town, and select, according to sample or description, such articles as he may need, in the same manner that he would send for any other class of goods which could not all be obtained at home.

The issue is fairly and squarely made and it remains to be seen whether the public prefer to pay 100 to 125 per cent. for the privilege of being bored at their houses and wheedled into signing a contract containing such clauses as the following:

"Should any stock be omitted through miscount, or otherwise, the amount of such omission to be deducted from the bill. If any sorts ordered should be exhausted in the nursery, you may supply such others as you deem desirable."

Under such a contract, costly or scarce articles are often promised as an inducement to obtain a large order, yet on filling, it these articles may be omitted at the option of the seller! Or, if A. buys five hundred apple-trees and wants four hundred Baldwin and and Greening, if those sorts are scarce, or "exhausted," the seller substitutes some cheap, fall varieties which may be, practically, worse than worthless to the buyer. Would the agent of any mercantile house dare make such a proposition in a civilized community? Would your grocer dare "omit" your pound of tea or "substitute" brown, because his barrel of white sugar was "exhausted?" It is this barbarian mode of selling trees which you have tolerated so long, that has filled your orchards with unproductive, unsalable sorts of fruit, and your gardens and lawns with miserable trash,

bought at exorbitant rates from the firms who prefer "small orders with large profits."

"And be these peddling fiends no more believed,
That keep the word of promise to our ear,
And break it to our hope."

Another, and much better form of contract, is as follows:

"SIRS: Please send me the following trees and plants at the prices annexed, to be delivered at ———, not later than ———, on the terms advertised by you (see terms), to be equal to sample in all respects."

This is a straight and honest transaction, and binds the buyer to pay for nothing except what he agrees to purchase and pay for; just that, and not something else. On this plan a gentleman may engage in the business of tree-selling without lowering his respectability. It places him on a par with any other commercial salesman.

This subject may or may not be of interest in your State, but it is being agitated with us, and will doubtless lead to good results, either in pruning the old system of its abuses or introducing a new one. Whatever the difficulties of growing trees may be in any section, local nurserymen are as much a necessity as local merchants, to handle and order goods needed in a neighborhood.

If I may be allowed to refer to my own labors in connection with the horticulture of your section, I might remark, that of the varieties of late-keeping Siberian apples, which were introduced jointly by myself and other cultivators in the northwest a few years since, several seem now to be coming into notice among the nurserymen, both east and west. But this is not the test needed by the public to determine their real value. It is the experience of fruiting. And it is to your proceedings that the public will look for information and reports that may come from cultivators. Having no personal interest in either growing or selling at present, I may say that I have reports from only one of the varieties introduced by myself, and that is the "Lady Elgin," which both in northern Illinois and western New York, has proved free from blight and the fruit has been uniformly fair and excellent. Its quality is such that it can be eaten out of hand after tasting Delaware grapes, and as it keeps till the holidays, it may replace the Lady Apple in the markets. It is fair to say that there are a number of Siberian apples

which possess remarkably fine dessert qualities, and if the blight does not vanquish this species it will undoubtedly yield varieties that will become a permanent acquisition to the country.

HINTS FOR ARRANGING FLOWERS.

MRS. H. M. LEWIS, MADISON.

No home can be made truly beautiful without flowers. No matter how elegant the rosewood furniture, the damask curtain, the rare picture, or costly statuary, if flowers are not there, to the person of truly refined taste, the eye wanders away dissatisfied, and longs for something more; let bouquets of flowers, pots of thrifty growing plants be interspersed among these elegancies, and home becomes the most beautiful and enjoyable spot upon earth. Yes, flowers, ye are always welcome, welcome in sickness or health, welcome in prosperity or adversity, welcome to the marriage-feast, or house of death, welcome to our cradle, to our altar, to our grave. The love for flowers is largely on the increase among our people. In time, we bid fair to rival the French or English in decorating our public and private houses with them. In New York and Washington, we already know, that upon a single grand wedding, dinner-party, or reception occasion, thousands of dollars are expended for flowers; fleral wedding-bells are sometimes sold for two hundred dollars, and baskets of cut flowers for fifty dollars, about holiday times, when choice flowers are scarce. In the New York papers we read that the "lovely Miss S—— is dead; five carriage-loads of fragrant flowers followed her to the tomb." Twenty-five years ago a bouquet of flowers was rarely seen in winter, and in summer, only the common ones were cultivated. Now florists are reaching out to the gardens of the east and the prairies of the west, in fact to all parts of the world for rarities. To our horticultural societies we are largely indebted for this increased education of our tastes. Let us increase this love for the beautiful, and fill our conservatories full, if we can afford it; if not we will have Sweet Peas, Mignonette, Violets, and Pansies, for they are the sweets of earth, and cost us nothing.

THE VASE.—In arranging flowers we will consider, first the vase. Bright colored vases are not as effective as white, brown, Swiss wood, silver or bronze; all will readily see, if the vase is green or blue, the color conflicts with the foliage in the bouquet; if pink or red, with the flowers. A bowl or broad open vase seems the most appropriate shape for roses. A tall, spreading vase, for gladiolas, ferns, tuberoses, etc.; flat glass dishes, or cups, for violets and early wild-flowers. "A flower lover will in time collect shapes and sizes to suit each group."

TIME FOR CUTTING FLOWERS.—If you wish your flowers to remain fresh a long time (and who does not), cut them early in the morning while the dew is still upon them; cut them with sharp scissors or knife, and remove unnecessary leaves; as soon as cut, drop them into a basket or tray. Do not touch them with the hands more than is necessary. In cutting roses, cut buds or half-blown ones; place them as soon as gathered in shallow tins or bowls in a dark cellar or cool place, until you wish to arrange them. They should be arranged two hours, at least, before wanted. A little water sprinkled finely over them sometimes improves fresh flowers, but rarely; it improves flowers beginning to decay. Flowers decay sooner when tied in clusters or bouquets than when arranged loosely. When ready for the table, place them in the vase, or dish, with cold soft water, add a few drops of ammonia, salt, camphor, or bits of charcoal; give plenty of fresh air, particularly at night. Some flowers, like the Archenia, Azalia, Rhododendron, have a way of dropping their petals just as they are most wanted. Florists let a drop of gum arabic fall into the center of the flower where it hardens at the base and fastens them tightly to the stigma. In cutting flowers, if you wish to avoid cutting unnecessary buds, cut the flower stem short, and tie with yarn to broom corn; put a little cotton between the stems and splint to preserve moisture.

ART OF ARRANGING BOUQUETS, BASKETS, ETC.—Assort your flowers according to size and color, and arrange them mentally. Before beginning, put the whole mind upon the work, and harmonize the colors perfectly, using green to separate the flowers. Do not crowd them; let each flower show its individual beauty, and a fine effect can be produced with but comparatively few flowers. We often see bouquets where fine flowers are used extravagantly, that are not pleasing, because of the crowded appearance. "The art of

arranging bouquets is very simple, if any one possesses a good eye for color, and has some idea of tasteful combination," Care should be taken to harmonize and blend the colors together, using white, neutral tints and green; nature says plenty of green. Each flower is beautiful in itself, but when you group sun-flowers and roses, pansies and marigolds, together the charm of each blossom is lost. We often see at our agricultural fairs, bouquets of this kind utterly devoid of beauty, that are literally packed with beautiful flowers. We long to see in their places something simple, like a handful of Nasturtiums, Pinks, or a single flower with its buds and leaves. In arranging flowers, avoid stiffness; let the bright fern or fresh fine grass, break forth now and then, and the delicate vine wander about in its pristine beauty.

In arranging hand bouquets, begin at the centre with roses or something rare and beautiful. "Always placing the brightest colors in the centre of your bouquet, and gradually decreasing the intensity of the tints as you approach the exterior;" mingle shades and colors, but do not put one where it can detract from another, for instance, crimson and scarlet, unless flowers are very scarce; but if obliged to use them together, put plenty of white and green between them. Blue and yellow will not satisfy the eye, unless brightened by red or pink; pink, pale blue, or light purple, harmonize well. The color and shape of the green is a valuable adjunct in making all symmetrical; that must also be carefully studied. The lace figured paper makes a fine finish for hand bouquets. In arranging baskets, begin at the outer edge. Drooping flowers and vines, and nearly all kinds of garden flowers, look well in baskets.

Bouquets for the dining-table are usually made rather low. The custom of making bouquets as high as the heads of the guests at the table, is happily passing away. The custom of putting a small fragrant bouquet of Rose-buds, Pansies, Heliotrope, Geranium-leaves, etc., in the napkin, is a charming one. Large rooms, with high ceilings, will admit of very high, showy bouquets. I once saw, against a very white wall, upon a corner bracket, a huge vase filled with broad, green leaves, long, drooping lilly or corn-leaves, several ferns more than three feet long, a few plumes of grasses, one or two spikes of Holyhocks, Gladiolas, large Zinnias, and Dahlias, all cut with very long stems, that gave me great delight. The foliage, from a little distance, reminded one of the tropics. Bright, green,

feathery ferns, and trailing vines, with a few bright flowers, are used in profusion in decorating our houses. Ferns were never in such demand as at the present time.

FLOWERS FOR THE SCHOOL-ROOM.—We do not half appreciate the importance of bringing flowers into our schools. They are, many times, to the mind what exercise is to the body; a bright bouquet, a mound of fresh, green moss from the woods, or a healthy, blooming plant, will refresh the tired mind of the student, and enable him to renew the tedious lesson with new life and willing heart; will give to the weary teachers (God bless them) rest and comfort. We will take a short extract from a note written by a model teacher to a lady who occasionally sent her a bouquet. "One bouquet you sent me last winter, will ever be fresh in my memory. There was nothing cheerful in the school-room, not even a map; the school was large; some very large pupils to get along with, and thinking I had such a large school, made it harder. I went into school one day greatly discouraged; your daughter came and gave me a bouquet. I knew not what to say or how to thank her. It awakened my better self; the tears would flow. A day never passed after that, that I did not try to say something cheerful to them." Who can say after reading this testimonial that flowers have no influence in the school-room?

A FLORAL SERVICE.—"There is in Old Gate, London, a rector who has for years past preached an annual flower sermon to the school children of his own and surrounding districts, The whole of the children sat in the body of the church, which was tastefully hung with garlands of choice flowers, while the adults occupied the galleries." I can conceive of no service more inspiring or impressively beautiful than this one, where the modest violet from the wild wood mingles its perfume with that of the rare exotic, and the fragrance ascends as an offering to God in the highest; for truly "floral apostles" speak more loudly than man ever spoke, and point with unerring finger to God the Maker of heaven and earth, and to His wonderful works, and to the home eternal, where flowers never fade, and the perfume shall be "wafted upon angel's wings." Why should not we have a yearly floral service. June, with its wealth of roses and flowers, or July, when the white water lily comes forth in its beauty and purity, would be suitable months. Each member of the congregation, and Sabbath School, should be called up-

on to do a part. Let this be the children's day if you please. Let us gather the poor from the alleys and street corners and open our pews ungrudgingly to them upon this glad day, that they may feel that religion, for one day in the year, is free to all. Each child can bring flowers, ferns, or green vines, and as they are given in, they can be woven into garlands, or placed upon mounds, or put into vases or baskets, with but little trouble. Might not this make a lasting impression for good upon the young mind, as the pastor directs the hearts of all to nature, and to Nature's God?

"Bring flowers to the shrine, where we kneel in prayer.

They are Nature's offering—their place is there!

They speak of hope to the fainting heart,

With a voice of promise they come and part;

They sleep in dust through the wintry hours;

They break forth in glory—bring flowers, bright flowers!"

THIRTY YEARS EXPERIENCE IN THE ORCHARD.

B. B. OLDS, CLINTON.

In reply to the inquiry by your Secretary as to the reason why my orchard was so productive the past season, while most of the orchards of the State yielded little or no fruit, I can only state the facts in the case, and give the observations and experience of over thirty years of fruit-culture in the State.

My location is upon rich, dry, prairie-land, somewhat rolling, black loamy soil, with clay sub-soil, and after three or four feet becoming mixed with gravel or resting upon limestone rock. In the spring of 1849, I planted an orchard of trees taken from the nursery of Mr. Bell, of Walworth county. Having had no opportunity for acquiring knowledge in fruit-raising, except what I had received in boyhood in my father's old orchard, mostly ungrafted, among the hills of Vermont, I consulted such works on fruit as I had access to, making up my collection of varieties, from those I knew to have borne a good reputation east, and others that bore a good description in fruit-books and nursery catalogues, without much thought of necessity of adaptation. Therefore while the Red Astrachan, Fameuse, Golden Russet, Tolman Sweet, and some

others grew right along and came into bearing, the Spitzenburgs and Rhode Island Greenings, with several other kinds, soon began to show they were out of their latitude, and gradually retired from the contest. In 1851, I enlarged my orchard with the same and other kinds, making about six acres in orchard; and having an opportunity of getting a few thousand seedling stocks, started in the nursery business on a small scale, from which I planted into the orchard, mostly at two years old, set two rods each way, till I had twenty-five acres. In transplanting from the nursery, was always careful to take none but thrifty trees, and to get as much root as possible, never allowing the roots to be exposed to the sun or drying winds; was also careful to give the roots their natural position, covering them with good mellow soil, and finishing by mulching heavily two or three feet around the tree. Consequently, instead of making out barely to live, they made a good growth the first year, and so onward to bearing age. During this early growth of the orchard, the land was kept in a good state of cultivation, alternately in hoed crops and small grain, manuring moderately, and mulching freely. As the trees became large and came into bearing, I have practiced seeding to clover every three or four years, only letting it remain one year without plowing, but never seeding to timothy. In setting out the orchard, I cut away all the branches I thought would not be needed to form a good head, and continued thus to cut out from year to year, so there is never occasion to slash away in cutting large branches, which I consider very injurious and often a fatal practice. On this one point, neglect of pruning in proper season, allowing the top to fill with a superabundance of branches, and perhaps suckers to surround the trunk, and then slashing off some of the main lower branches leaving the top unthinned, I believe is the cause of failure among the common, careless farmers or non-fruit-growers.

My trees were generally quite large before bearing, but, since coming to bearing, have not failed to give a partial to fair crop, with few exceptions. Some four years since, my youngest orchard, having a southwestern aspect, was attacked by the canker-worm, and while under treatment for their destruction, furnished no fruit. In 1874 it gave a good crop, while my older orchard, with a northwestern aspect, gave very little, as was very common in that season in many parts of the State. This last season the old orchard

gave about half a crop, while the one that had been infested with the canker-worm took a rest. A large orchard, two miles from me, bore heavily that had been literally filled with the canker-worm for several years previously.

Now I wish to speak of an orchard of five acres, planted, I think, in 1858, by a neighbor, in close proximity to mine, which I came in possession of six years ago. The aspect is a very slight inclination to the north. The planter had been a very careful observer for years of others successes as well as failures and therefore, as was his privilege, improved upon them.

First, he put the ground in a high state of cultivation; then, with a carefully selected list of the best kinds, procured the most thrifty young trees he could find, mostly two or three years old, handling them with the utmost care, and continuing the same care in cultivation and pruning till they came to bearing, as the result of which the trees made a rapid and healthy growth, and yielded a fair to a large crop regularly, not excepting the last year. With this experience and observations made, I am led to the conclusion that we need not despair, but may reasonably hope that, with determined perseverance in the right direction, we may not only have plenty of good fruit for home-use, but probably become equal to any of our sister States in making apple-raising a leading and profitable business in favorable locations.

A few words more as to future projects. I have become so much in favor of planting young trees that I intend to put out an orchard of 500 trees next spring of yearling trees. Have also a plan for building a fruit-house, constructed so as to regulate the temperature at will during the warm fall weather, as well as the cold winter, as I believe no common cellar is well adapted to the keeping of fruit.

OUR WINDOW PLANTS.

MRS. I. H. WILLIAMS, MADISON.

“ — God Almighty first planted a garden;
And, indeed, it is the purest of human pleasures.”

In these enlightened days, when the broad wave of gentle culture is spreading far and wide, it is rare to find a house, be it high or lowly, where one or more windows are not devoted to the growing of plants. In this climate, where stern winter reigns supreme almost nine months of the twelve, we must resort to window gardening, or our enjoyment in plants would be very limited. One often hears the remark, “How much more difficult it is to raise house plants now than it was in the days of our grandmothers.” The opportunities for improving one’s culture of such was not, then, what it now is, with our many papers and magazines to teach us the way. Why is it? I think the variety of plants must have been of a more hardy nature than we would be content with. Old-fashioned Roses, Stocks, Wall-Flowers, China Pinks, and such, filled their windows. Their houses were not, as those, of to-day, almost hermetically sealed; the light of wax-candles, or sperm-oil gave forth no gas. The living-room was where the tea-kettle was ever on the hub, and the escaping steam preserved the moist atmosphere, that bids defiance to the troublesome red spider. The windows were not darkened by heavy drapery, and the sunlight was freely admitted, even though, by so doing, the carpet lost much of its brightness. So they had many of the needed requisites to produce fine plants and luxuriance of blossom, namely, light, sun, air, heat, and to this add freedom from insects and dust. We have all seen the slender, pale, sickly attempt of growth grown in a dimly lighted cellar, if only in sprouting of potatoes, proving the great need of plenty of light for healthy plants. There are many varieties that will thrive only in a shaded position, but none that will do well if denied strong light.

Heat is another great matter to be considered, also a uniformity of it; a temperature of sixty degrees during the day, to forty-five at night. Plants can be grown at a temperature of forty degrees, but they will only live, and not have sufficient strength to produce bloom, and that is what all who raise plants desire to repay them for the labor bestowed. As a general thing, our rooms are too warm and dry during the day, and the fall of heat at night chills the circulation of sap, thereby checking growth and blossom. Ventilation is quite an important consideration; there are noxious gases thrown off from heated iron, which are very injurious to plant life; there is always more or less gas escaping from coal stoves, as well as leakage from gas-pipes in our dwellings. We know how disagreeable the air of a poorly ventilated room is to ourselves, and it is equally so to our window pets. Of course care must be taken in giving fresh air, to prevent a direct draught upon them. Insects and dust are the great enemies against which we must constantly wage war. The insects must be smoked, or washed off in a bath of warm soap suds, then dipped in tepid clear water. Once or twice a winter will not suffice; it should be attended to at least as often as once a week, even though we do not see any insects upon them; for an ounce of prevention, in this case, is surely worth the pound of cure. The washing will remove the green fly, or aphid; also the red spider, which is so apt to attack house plants—the latter caused by too dry an atmosphere. If water could be kept on the stove, it would lessen the dead heat; if not, water in saucers might be placed among the plants. The dust which is constantly rising, must also be removed, by sprinkling, or dipping in water; if anything in nature can look its thanks, plants surely do after being thus revived.

Before arranging our plants, let us take into consideration the size of our windows, so that they may not be crowded, and the exposure as regards the sun. Here is where so many fail; getting together a miscellaneous collection of plants, some that must revel in sunlight to bring them to perfection, others that in their native state are found in deep shade; some needing the greatest amount of heat, others a cool shady location. There are plants to suit all windows, sunny or sunless, all can be gratified. For the bright south window, we will have the ever welcome Heliotrope, Mignonette, Geraniums, Oxalis, Callas, Bouvardias, Carnations, Coleus,

Hyacinths, Daphne and Roses; and of vines, Maderia, Sweet Potato, Jessamine and Maurandya. Fortunately for many, there are plants which will thrive without the life-giving sun, so that with our north windows we may "make sunshine in a shady place." The sunless windows have received far too little attention; the wise ones have written sparingly on the subject, and by sad experience have we been taught that some varieties of plants, if grown in the shade, might have been specimens of beauty and loveliness, but they drooped, dragged out a miserable existence, and finally died from too much sun. For the shady windows there are Fuchias, Primroses, Violets, Vincas, Camelias, Begonias, Ivys, Smilax, Ferns, Tradescantia, Lilly of the Valley and Snowdrops. Then, again, there are plants that require a great amount of heat and are not particular about the sun. They can be grown in a room where the stove and window are in close proximity: Begonias, both the flowering and the ornamental leaf varieties, Poinsetta, Euphorbia, Cactus, Sedum, Coleus, Achyranthes, Gesuevia, and some of the Echeverias.

Another of the frequent causes of failure with plants, is in the mistaken kindness of a too liberal supply of water. More plants have come to an untimely end by such treatment, than have died from neglect. I know the temptation is very strong when there is just a little more water left in the sprinkler to give it around, oftentimes leaving them in a drowned condition, No matter how good the drainage may be, no plant but an aquatic can thrive with its roots constantly in soak. Let the earth be dust dry, at least once a week, then give a good watering, and they will not need more for some days, unless the flower-pots are very small. In purchasing plants, if the location they were to grown in could be given: plants suited to such places could then be selected, and the mode of treatment given, and greater success could be arrived at. Do not attempt the care of too many; far better six or eight, perfect specimens of their kind, than twenty gaunt, bare-looking objects, with a few tiny, half-starved leaves on the points.

All these are probably unnecessary hints to the large majority of our Madison amateurs, as the great number of windows filled with verdure and lovely blossoms through the long winter fully attests, but may be of some benefit to the novices who would also have a little green Eden of their own.

SMALL-FRUITS—THE IMPROVEMENTS NEEDED IN
CULTURE AND VARIETIES.

J. M. SMITH, GREEN BAY.

To one who only sees the deluge of berries that flood our markets at particular seasons of the year, it may seem like nonsense to talk or write about the necessity of a greater variety being needed. When one is told that the varieties of strawberries are numbered by hundreds, he would naturally say that anyone, however fastidious in his tastes or desires, might satisfy himself out of this large number; and yet the fact is, that there is but a single variety out of this large number, that has proved itself fitted for general cultivation, or that has proved itself even fairly profitable, except in limited areas of our country. And of this one variety (I allude of course to Wilson's Albany Seedling), it is often said it is only second or third rate as to quality. I do not propose to give my views as to strawberry cultivation at the present time, they having been copied somewhat extensively from an address upon the subject given before the Brown County Horticultural [Society. I propose in a few words to point out what seems to me to be the present want in this line of fruit-growing.

First our strawberry season is too short. It is either a flood or a famine with us. It is true that we can supply our tables with fruit from the south, if we have the money to spare, and choose to use it for that purpose; but how much nicer, as well as better it would be, if we had the supply from our own grounds. By looking over my tables for the last five years I find that the strawberry season has been as follows: In 1871, commenced selling June 9. Sales closed July 4; season, twenty-five days. In 1872, from June 24 to July 11, or eighteen days; 1873, from June 23 to July 10, eighteen days; 1874, June 22 to July 10, nineteen days; 1875, June 21 to July 24, thirty-four days. This is an average of nearly twenty-three days, though it should perhaps be

stated that last season, the time was lengthened beyond the ordinary period by artificial watering. These figures prove conclusively that we need at least two more varieties viz.: one that shall come on a little earlier, or, in our climate, as near the first of June as possible, another to come on later, and continue the season until the raspberry crop shall be fairly ready for the market. These varieties should be hardy; they should be good berries, with the hermaphrodite or perfect flower, and in quality should be at least equal to the Wilson. If they are better we will not complain. Here is a desideratum that I have been looking for, for at least fifteen years, but in vain, unless indeed, the Kentucky, which I am now testing, shall be of some assistance in lengthening the season; though I have in reality but little faith that it will prove itself to be of permanent value in that respect. I would very cheerfully give \$50 for a dozen strong, healthy plants, that will be as good, in every respect as the Wilson, and only one week earlier. I would give \$50 more for another dozen of such plants that would continue in full bearing one week later than the Wilson. I hope and trust that this object may be attained, and the sooner the better.

If we could have varieties that would endure our very severe winters without being covered, I should be glad, although I have but little hope of this being accomplished. This beautiful and modest little beauty is the earliest of our fruits. It is a favorite of almost every one, old and young, rich and poor. It is no longer a luxury for the rich alone, but has become a necessity, and should be so plenty and cheap, that not only those in comfortable circumstances, but the industrious laborer could have a full supply during its season.

The next upon our list is the raspberry. Here the list upon the books is far from being as great as is the case with the strawberries, yet we are not confined to a single variety; there being several of them that are fairly profitable for the market, and good for the table. There is less difference of opinion as to the best method of cultivating this fruit than with the strawberry. A very common method being to set the rows six feet apart, and the plants about two feet apart in the rows. My own experience and observation confirms me in the belief that a number of mistakes are made in the ordinary method of cultivating this fruit. First, they need a damper soil than they usually get. Second, they need more

manure than they get. Third, they need winter protection, and lastly, they are not sufficiently trimmed and thinned out in the spring. I do not propose to take up your time in arguing these points, although I have seen some remarkable instances of the advantages of being both careful and thorough in the cultivation of this fruit. Here we need something more hardy. We need something that will endure our winters not only without being occasionally killed, but that will do it without being injured. I have tried quite a number of our most hardy varieties, but as yet have found none but what are often injured more or less, though they are not often killed outright. Once within ten years my Philadelphias have been killed to the ground; two or three times they have been more or less injured; twice within that time my Doolittle, Miami, and Golden Cap, have been killed, and a number of times injured. The Clark, and one or two others of the more tender varieties were killed nearly every winter until I threw them away.

We need a variety of red berries, that will bear transportation better than the Philadelphia, which perhaps stands the highest of the red berries now cultivated in the west. I, for one, would not object to an improvement in the quality. Here, too, as in the case of the strawberry, we need something a little later, something that will carry us fairly into the blackberry season. And unless we can get a later bearing strawberry we need an earlier raspberry.

Next comes the blackberry. Here I scarcely know what to say, except that we may as well own up that we have no good variety in this class that will endure our winters without being well protected. In the portion of the State that I, in part, represent, the wild berries are generally so very plenty, as well as cheap, that we could scarcely afford to cultivate any variety of them, even if they were sufficiently hardy to endure our most severe winters without protection. But where the wild fruit is not attainable, a variety as good as the Kittatinny and sufficiently hardy to stand any and all our winters without protection, would be a plant of great value. The canes of this fruit are so stiff and heavy, and so disagreeable to handle, that covering them is really a very unpleasant, as well as an expensive work, and in reality amounts in many places to a prohibition of its cultivation. Hence the great necessity of some new standard variety for cultivation in a climate where the winters are as severe as in this State and Minnesota.

Next and last, though not least in importance, is the grape. It is probably true, that there has been more improvement made in grape-culture within the last twenty years, than in any other variety upon the list of small fruits, still we have not reached perfection. The Delaware is almost my ideal of a perfect grape for table use; still even that is not perfect. The seed is rather large for the size of the berry, which is itself small. But after making due allowances for its defects, it stands to-day at the head of the list of table grapes for this continent; and I think it superior to any European grape that I ever tasted. Another great advantage is, that it is decidedly a northern fruit. I think that the finest and most perfect specimens of this fruit that I have ever seen, were grown in the Fox river valley in this State. Taking this as our standard for quality, what do we need? In the first place we need an early grape that shall ripen at least as early as the Janesville, and if earlier all the better, and that shall be as good in quality as the Delaware, with a large berry, and a somewhat more vigorous vine, especially while young. We need a late keeping grape; something equally as good, and that will keep with reasonably good care until the following spring. When we have attained these, we shall be much nearer perfection in small-fruit growing, than we are at present.

It seems to me that here is a splendid opening for a man of the right stamp to make himself a fine reputation, to make some money, and at the same time to render a service of great value to his fellow men. I am not unaware that there are, and have been, men at work in all of these departments of fruit-growing for years past. But it is evident that the right men are not yet at work, or if they are, they have not yet been at it long enough to perfect it. In strawberry culture there has been but little real improvement made that seems to be permanent, since the introduction of the Wilson. In raspberries we have done a little better, though as I before stated there is still room for improvement. Our list of blackberries is as a general thing entirely unreliable without good winter protection when carried north of forty degrees. We have a number of choice varieties of grapes that thrive and do finely as far north as forty-five degrees, and in favored localities a few degrees farther.

Here then is work for the future. And the man or the men who, by patient and intelligent labor, and steady perseverance, will in-

roduce to us the new varieties of small-fruits that will fill these wants, will confer a lasting benefit upon the whole northwest. He will deserve our sincere thanks, and will doubtless receive a handsome pecuniary reward.

ORCHARD PROTECTION.

H. M. THOMPSON, ST. FRANCIS.

Observation and experiments in fruit-growing already cover a period of a generation and upwards in the northwest, and it is not an open question at this day that there are climatic conditions prevailing in the northwest which naturally retard, and have, in a measure, discouraged fruit-tree planting. How these adverse conditions of climate may be most successfully counteracted, is a question of moment, alike to fruit-growers and consumers, and it is desirable that the most efficient preventives be ascertained and adopted in the cultivation of fruit generally. The experiments made with standard varieties, originating in the eastern, middle, and southern States, have proved that most of those varieties possess certain peculiar constitutional characteristics in their composition and structure, which render their existence precarious when planted in localities containing different soils, and subjected to climatic conditions entirely the reverse of those to which such varieties were subjected in their origin. The Baldwin, Spitzenburg, and Rhode Island Greening may be cited as instances in question. On the other hand, it has been ascertained by experiments that certain varieties of apple-trees, originating in localities where the various conditions of soil and climate are similar to the conditions prevailing in the locality to which they are removed, do not appear to suffer by removal. In confirmation of this view may be cited the introduction of the Fameuse, from Canada, Red Astrachan, Duchess, Alexander, and the Currant Crab, from northern and northeastern Europe. The determination of these important facts may be considered as the first step toward the discovery of other important facts necessary to the advancement and success of horticulture in the northwest.

Other causes of failure also exist, the most prominent of which are believed to be, frequent and sudden alternation of freezing and thawing when the ground is surcharged with moisture, causing the separation of the bark from the wood-structure of the roots, or the disruption of imperfect formation in the roots in consequence of late and unperfected autumn-wood growth; or, the cellular formation, be the same perfect or imperfect, may be injured by the withdrawal of frost in early winter, mid-winter, or spring, when the earth is devoid of moisture. In this instance, the interstices existing in the soil about the roots, being filled with air, the withdrawal of frost has the same tendency to impair cellular formation as would result if the roots were above ground at the time. Injury may also result from excessive exhalation of moisture, induced by cold, dry winds when the extremities of the roots of the trees are encased in frost, or strong winds may sway small trees, from an upright position, and thereby produce a cavity in the soil at and below the collar of the tree, which is liable to be filled with water by rainfall. A subsequent lowering of temperature causes congelation and expansion, thereby bursting the bark at or below the collar of the tree. Injuries also result from the premature circulation of sap in the south and southwest portions of the stem of the tree, induced by the absorption of heat from the sun's rays, and the sudden arrest of the circulation and the expansion of the sap, and rupture of the cells in consequence of congelation by subsequent freezing."

Having ascertained and enumerated some of the causes which tend to produce disastrous and often fatal results to vegetable life, the next step leads to a consideration of the most appropriate and effective means to be adopted, as a preventive to the recurrence of the many causes that impair tree or vegetable life and growth; and as a combination of causes seem to produce results tending to impair vegetable life, it is also to be presumed that a combination of preventive measures are required to counteract or obviate the causes that result in injury. The following propositions of preventive means are accordingly submitted:

1. The introduction of varieties originated in soils under climatic conditions similar to those prevailing in the locality in which such varieties are to be planted.

2. The originating of varieties adapted to the conditions of climate, by repeated reproduction from seed.

3. The originating of varieties by hybridizing, using the improved varieties of the Siberian crab, and some of the best, and most promising varieties of apples as parents.

4. Winter mulching.

5. Top grafting.

6. Using seedlings grown from acclimatized seeds for root grafts.

7. Amelioration of the severity of climatic influences through individual, corporate, and State efforts in enlarging the forest area, by forest tree-planting, and by the preservation of the natural forests.

8. The protection of orchards and small-fruit grounds by the planting of belts of evergreen trees.

The first means of obviating or counteracting the peculiarities of soil and climate in question is being met by the introduction of the Red Astrachan, Alexander, Duchess, and the testing of numerous other varieties from similar sources. In compliance with the terms of the second proposition, the process of acclimatizing by reproduction is laborious, and considerable time must necessarily elapse before the desired results can be obtained. In promise of its eventual fulfillment, may be cited the production from seed of a number of varieties in Minnesota, Iowa, and Wisconsin, possessing considerable constitutional vigor and hardiness, which may serve for the reproduction of other varieties possessing still greater inbred constitutional adaptation to the climatic influences with which they must come in contact.

The preventive means specified in the third proposition have promise of fulfillment in the past and present efforts of earnest and eminent horticulturists to obtain by hybridizing varieties of apples, the trees of which shall be as hardy as the crab, and the fruit of which shall partake of the size and flavor of the best varieties of apples now in cultivation.

The means specified in the fourth proposition, by way of mulching, may be fulfilled by the general adoption on the part of orchardists of the cheap labor system of sowing rye, millet, Hungarian grass or buckwheat in the latter part of the month of July, and allowing it to remain on the ground through the winter, and there-

by preventing the alternation of freezing and thawing which produces so much injury to the roots of fruit-trees and small-fruits.

The difficulty in complying with the terms of the fifth proposition, by top grafting, is in determining what varieties will form a perfect union with the hardy stock upon which it is proposed to graft, efforts therefore in this direction should be confined to grafting those varieties, which are known by experiment to be suitable for the purpose intended.

The beneficial results to be derived from the use of seedling roots, grown from the seed of those varieties which have become acclimated, is apparent, if it be conceded that the transmission of inbred qualities is the same in the vegetable, as in the animal kingdom, in which physiologists assume that "like produces like" subject, however, to variation by modifying causes.

As to the seventh proposition, for the purpose of temperature, increasing rain-fall, and of retarding the evaporation of moisture from the soil, and of breaking the force of winds, efforts should be encouraged for the more general planting of trees in the form of forests, and timber-belts upon the boundaries of farms, and at least one line of trees should be planted upon each side of the line of railways, and two lines of trees upon each side of all public highways.

The eighth proposition requires for its fulfillment the enclosing of all orchards not favored by nature with forest protection, with belts of evergreen trees. Hence it is important that such facts as bear upon the supposed benefits to be derived from such protection, should be brought to notice.

It is conceded that cold air in motion has the property of extracting heat in proportion to its velocity. In illustration of this fact, we will suppose that when the mercury is below freezing point, a person emerges from a forest or place where the air is not in motion, and enters a treeless plain or place where the air is in motion at any given velocity, there is apparently a sudden increase of cold; the apparent lowering of the temperature is due to the increased extraction of heat from the physical system, caused by the moving atmosphere. In this instance, there is not only an increased loss of heat by exhaustion, but there is also an accelerated loss of moisture by exhalation from the physical system, proportioned to the degree of temperature and the velocity of the wind, and as vegeta-

ble life is, in many respects, partially, if not wholly, subject to conditions which affect the physical system, it is assumed that the velocity of the prevailing winter winds which pass over the large extent of treeless plains of the northwest must be very great, and that the extraction of heat and exhalation of moisture from exposed vegetation, must be in proportion to the degree of cold, the velocity of the wind, and the length of time during which these adverse conditions prevail. The effect of these influences upon trees that have made so late a growth in autumn as to leave imperfect cellular formation in the whole or any portion of the tree, in combination with either a very dry or wet soil, may be partially manifested in the disintegration of the imperfectly formed cells of the roots, or in the bursting of the bark at or near the collar, or in the rupture of the inner bark and wood-cells of portions of the stems, and at the junction of branches with the bodies of the trees; or the injury may be confined to the extremity of the branches, or in extreme cases, when subjected to many or all of the conditions adverse to the sustenance of vegetable life, the tree may be injured in every part of its organization.

Now as the longevity of fruit-trees is dependent upon the peculiarities of their constitutional organizations, and upon the climatic conditions to which they are subjected; and as these conditions are violent extremes of cold and heat, dependent upon the velocity and direction of the wind; and as the coldest and strongest prevailing winter winds are from the west and north-west, and the thermometer ranges the lowest at the time or soon after the wind is from that direction, and highest when from a southerly direction; and as the degree of extraction of heat, and the volume of exhalation of moisture are greatest when the winter winds are in the northwest; and as these dependent forces result in injury to vegetable growth and life, it is clearly deducible, that strong winter winds are one of the principal causes of injury, and that, if by any means orchards can be so protected as to break or impair their force, the injuries manifested in orchards will be lessened in like proportion. If this be true, tender varieties planted and tested in orchards which are located in the heavy timber lands, some of which have the original forest growth so located as to break the force of the wind upon one or more sides of the orchard, may be expected to afford examples tending to substantiate the conclusions herein de-

duced. The majority, if not all the intelligent horticulturists of the State concede that many varieties of apple trees are more hardy and productive in the heavy timber counties bordering upon the western shore of Lake Michigan, than the same varieties grown in the oak openings or in prairie sections.

The productiveness of tender, as well as hardy varieties, in the lake shore timber counties, may be partially attributable to the influence which so large a body of water as Lake Michigan must necessarily exert upon the atmospheric currents in the summer months. But this influence is not as considerable as might be presumed, from the fact that the prevailing summer wind is southwest. The lower air current, therefore, being towards the lake instead of from it, is only modified so far as the upper air current, moving in an opposite direction, may, in its course, ultimately join the whole or a portion of its constituents and forces with the lower air current. In the winter months the prevailing winds are from the northwest, and when the winds are from the lake to the land, the mercury might be expected to range lower at lake shore stations, than at stations further inland, in case there are no modifying upper air currents, and no forests to obstruct the force of the wind. But suppose it to be conceded that when the wind is northwest the mercury is not as low as at inland stations, it is assumed that when the wind is from the lake to the land, the water of the lake being warmer than the air current modifies the degree of cold, and as the air current progresses inland, the temperature is gradually lessened so that the actual extremes resulting from a westerly or northwest wind, and an easterly one, are greater than in the inland counties, and that the injuries resulting to fruit-trees, from the greater extremes of temperature in the lake shore counties would be greater than in the inland counties, were not the winter extremes of cold, existing when the wind is northwest, modified by natural forests.

Neither can the supposed or real differences which exist between the hardiness of orchards in the timber and prairie counties be attributed entirely to different constituents contained in soils, from the fact that the soils in the timber counties are so variable, that the plant-food ingredients contained in the various gradations of clay, sand, gravel and loam, are to be found in almost every orchard of considerable size, the soil constituents of which are wholly or partially represented in soils contained in orchards in the prairie

counties. In all the timber counties that have come under my observation, the healthiest and most productive orchards, are those that have the original forest growth, located upon the north or west side or both. As a further evidence of the benefits derived from orchard protection may be cited the facts, that in the early settlement of Milwaukee county, the whole country extending from the lake to the prairie was a dense forest, with occasionally a clearing of from two to ten acres; at this time peach trees were planted which came into bearing, and produced so abundantly as to break down many of the trees, while others perished from exhaustion, caused by over-bearing. Since that time, the land has been denuded of timber to such an extent, that peach trees can not be grown, except in isolated localities favored with some sort of protection.

Having determined some of the causes that have tended to cause injuries to fruit-trees; and having adverted to the laudable efforts which have been, and are now being made for the introduction of iron-clads, originating hybrids, acclimating varieties by reproduction from seed, and winter mulching for the purpose of prevention; and, having cited facts indicating that natural forest protection is beneficial, it remains to be seen, what further efforts are necessary to assist and forward the steps already taken for the accomplishment of the desired results, in the shortest possible space of time.

As already shown, the winter winds are one of the prime causes contributing to produce disastrous results. Hence orchardists should consider it of the utmost importance to plant belts of trees around their orchards; the trees to be planted at such distance apart that the subsequent growth may, within a reasonable period of time, be sufficiently compact, to break or impair the force of winds; and also to plant dense lines of trees in the orchard, at distances of not to exceed one hundred and eighty feet. Evergreen trees are the best adapted for orchard-belts and protection lines, from the fact that they retain their foliage; each leaf of the compact foliage tending to obstruct and break the force of the strongest winds, and thereby lessening the extraction of heat, and the exhalation of moisture.

One row of evergreens closely planted will not only cost less money, and occupy less surface of ground, and require the expend-

iture of less labor in planting, but will prove more efficacious for the purpose intended, than ten rows of deciduous trees, which have only their naked stems and branches to obstruct the force of the wind. Individual efforts in planting evergreen timber belts for orchard protection will not only prove efficacious for the purpose intended, but will be found to be practical and effective in producing early satisfactory results from the fact that the results will enure to the benefit of the individual planter, and are not subject to the delay incident to the passage and enforcement of statutory enactments, or want of concert of action, when dependent upon public effort.

The attention of orchardists being called to the necessity of planting evergreen tree belts for the purpose of preserving the vitality of fruit trees, preventing the fruits being blown off the trees, beautifying the landscape and enhancing the value of real estate, fruit-growers should not hesitate to adopt the principle that the planting of an evergreen timber belt is just as necessary a requisite as the planting of the orchard itself. Orchard protection is not only beneficial, but is also entirely practical, from the fact that small evergreen seedlings suitable for timber belts, and for forest tree planting, are now grown from seed in America, as in Europe, by the millions, and can be purchased at so small an out-lay of money, that the entire expense need not exceed the cost and labor of planting the fruit trees contained in the orchard.

THE CODLING MOTH.

E. G. MYGATT, RICHMOND, ILL.

There is great difficulty in preventing this insect from spoiling a large share of our apples. Want of co-operation in neighborhoods prevents success in the case of individuals who are using the best known means for its destruction. If all, both in villages and in the country, would try, much might be done with the remedies now known to lessen the ravages of this insect. What are these remedies?

First, destroy the larva as far as possible. The larval period of

the first brood is very short, only some three or four weeks in the forepart of summer, but that of the second brood must be fully eight months; from late in August until the next May. Eight years ago last September, I placed some choice early apples in a closet where I kept my best clothing; during the winter, I found under my vest collar the larva of the codling moth, plump and active; leaving it undisturbed, I carried it to the Northern Illinois Horticultural Convention, in February. They can be found just as plump and active about the hoops and head linings of apple barrels taken from the cellar in April. During the winter they remain in their nest, not a proper cocoon but selecting a position where they can just enter, they close up the sides all around them and there remain until time for them in the spring to form their cocoon, in which, in a few days, the larva or worm is transformed into a moth, a slim, gray miller, which, when the apples are very small, flies at night and deposits one egg in an apple. Well informed entomologists think that each female is capable of laying about 150 eggs; consequently a pair of moths will destroy about that number of apples. As they are double brooded—first brood working in the young apples in June, the second brood in August and September—those not destroyed by man, animals, birds, and parasites are capable of spoiling much fruit.

During the month of March following, after the severe cold weather is past, we would recommend scraping the rough bark carefully from the bodies of the trees. We may see some of the worms and kill them. Those which drop on the ground will be too torpid to crawl up, and we think would be killed by storms and freezing. In scraping off the bark, use a transplanting or plastering trowel, and try to avoid injuring the live bark. A hoe is too rough, unless very carefully used.

As another preventive we should sort our apples very carefully in the fall, and put as few wormy ones in our cellars as possible. Where apples are kept in barrels or boxes in the cellar, the apple-worm is often seen under the tops or head-linings, or crevices, where they can crawl in and find a dry place. We have found them under the head-linings on the bottom of the barrel. If they can get out of the cellar, they will enter the rooms above and conceal themselves about clothing. These boxes and barrels should be taken out of the cellar in April, and carefully examined and the

larva killed, by those living in our villages, as well as those on farms, if they wish to secure a plenty of good, sound fruit. As by the most careful search, we shall not be able to kill all the larva, I would advise imprisoning the moths in our cellars until they perish for want of food, after they are transformed. Let every one devise the best means he can to effect this. In mild weather we must have ventilation through our cellars, but can we not place gauze over the open windows, and mosquito netting or wire doors at the main entrance? Sometimes the moths may be seen flying to our windows at the approach of evening, trying to get out. They may be readily known by the large, dark and nearly round spot on the wings. It would not be much out of the way to advise the destroying of all moths from the small white carpet miller to the larger ones, as they are parents of worms which do us much damage in various ways. Our best entomologists believe that about half of the worms leave the apple before it drops, the other half drop with the apples. Pasturing with hogs or sheep has been tried. They will get about half of the worms, but, as a rule, hogs can only be used during the summer months, when grass is plenty, not late in the fall or winter, as they are very destructive to the trees. Sheep are still worse late in the fall, and during winter. We know a number of neighbors who have had over half of their orchards destroyed in this way.

Bands around the body of the tree are very useful in destroying the larva. The rough bark should be carefully scraped from the tree and then a band, about four inches in width placed around the body. It should be long enough to lap a few inches, and be drawn up with some firmness in the middle and be fastened with a tack. These bands can be made of cast off clothing. Some use old newspapers so doubled as to have four thicknesses and tacked in the same manner as the old clothing. The tack should be removed and the band carefully rolled back, the worms killed as they are seen and then replaced as before. This should be done twice a week during July. In one season in July, I killed one hundred and thirty-six codling larvas under a flannel band on one full bearing tree which stood six rods from the trough where hogs were fed. Some propose to leave the bands on ten days or more without examination. When so left some worms would form chrysalids and hatch and the millers commence laying eggs in sound fruit.

Old woolen cloths placed in the forks of the trees will entrap many of the larva, and should be examined often. After the middle of August the bands need not be examined until towards winter, when they should be taken off, the worms killed and the bands burned.

As at first stated, we should be careful in assorting our fruit in October, and take as few wormy apples as possible to our cellars; destroy the larva in April in the cellar; imprison the moths there during the months of May and June; put bands around trees all of July, killing the larva often; watch carefully and destroy the second brood in September and October.

LESSONS OF THE PAST SEASON.

E. WILCOX, TREMPÉALEAU.

The winter of 1874-5, unlike that of 1872-3, injured the bodies and limbs of our fruit-trees in this section, while east and further south the destruction was mainly in the root. This enables me to again mount my hobby with greater facility and more assurance. Among other suggestions made by F. R. Elliot before the American Pomological Society in September last, was the following. "The growing of trees from grafting or budding upon roots of seedlings grown from refuse seed of apples or pears from the cider mill is no better towards the improvement and reliability of varieties than that of growing stock or mankind from hap-hazard meetings. Selections of all future life must be made from pure and hardy stock, free from contamination, to secure advance by growing in the vegetable as well as in the animal. All the records of growth and longevity in orchards may be traced to the stock upon which they have been worked. It is the same in the vegetable, as in the animal kingdom; if the native, healthy character is not kept up by the knowledge of the proprietor and manager, then decay must exhibit itself in a large percentage of the stock." From this want of knowledge of the origin and hardiness of the stock, comes the wholesale destruction of trees in our orchards.

Our great losses in the severe winter of 1872-3, from root-killing

taught us a lesson which we hope will be beneficial. Now, what is the testimony from much milder climates? The South Haven Pomological Society, of Michigan, appointed a committee to investigate and report upon the cause of the root-killing of fruit trees in the winter of 1874-5. The following replies were drawn out in response to their circular. The secretary of the Warsaw Horticultural Society, of Illinois, says: "No root-killing with us until the past winter. Small trees universally killed; not much difference on light or heavy soils; difference generally owing to exposure; places exposed to the northwest winds the worst; peach, apple, and osage plants, yearlings, and some two or three year old trees, most generally killed." D. R. Waters, of Spring Lake, Michigan, says: "I am of the opinion that trees on dry soil suffered most; trees were not generally favored with a mulch of snow. All root-killed trees leaved out, and some of them, especially on ridges, blossomed when the same varieties where uninjured were blossomless. I will call your attention to the experience, in planting an orchard, of my friend, Thomas Petty, Esq. In purchasing his trees four years ago he received and planted as a valuable variety of the peach, fifty almond trees. During the four years these trees have stood in the ground, he has found but two borers in them, although they have been carefully examined twice a year in common with his other trees, and while the peach trees on every side had been root-killed, not one of the fifty almond trees had suffered. As a remedy against root-killing and borers also, does not this experience suggest to nurserymen that it might be valuable to bud the peach on the almond stock, and would not this also be another guard against the yellows?" A lengthy report might be given of the destruction of nursery-stock by the winter of 1874-5, but the following will be sufficient. The New York Tribune, last summer, stated that \$160,000 worth of stock was killed in the nurseries within three miles of Danville, New York, the previous winter. It has also been stated on good authority that 200,000 trees were root-killed in one nursery, and that too, hundreds of miles south of my location, which I am advised to leave. Where shall I go? Perhaps we may be able to overcome all our difficulties and stay where we are.

In giving a history of the origin of our improved fruits, Downing says: "Transplanted into a warmer aspect, stimulated by a richer soil, reared from selected seeds, carefully pruned, sheltered

and watched, by slow degrees the sour and bitter crab expands into a Golden Pippin; the wild pear loses its thorns and becomes a Bergamot or a Beurre; the almond is deprived of its bitterness and the dry and flavorless peach is, at length, a tempting and delicious fruit."

Now to arrive at this perfection of fruit has there not been a corresponding loss of vigor and hardihood of the tree? This seems to be indicated in the case of the almond, already given, also of the fact that seedling crabs in my ground escaped injury in the winter of 1872-3, while trees of the same age grafted on apple roots and standing side by side, were almost universally killed. These facts, with many others which might be given, carry conviction to my mind that we must resort to seeds of hardy varieties, to get stock to graft and bud upon, and having secured this, even if the roots will stand the pressure, we shall find our work only half done, for the bodies and forks of nearly all of our own hardiest standards will fail us, through bark bursting etc., and we must resort to the crab or something equally hardy for the body and limbs well above the forks, into which we can safely bud or graft the hardy, standard varieties. A year ago I exhibited some trees and read an article giving some of my experience. The following testimony of E. G. Mygatt, of Richmond, Illinois, bears upon the same point. He says: "We are fully satisfied that varieties which root-kill in severe winters will bear uninjured a very low temperature as top-grafts in hardy trees. Last winter, we had about two hundred each of Fameuse and Ben Davis, as nursery-trees, nearly four years old. Nine-tenths of both kinds were root-killed, while we had at the same time several top-grafts of Ben Davis, Willow-Twig, Baldwin, Twenty-Ounce, and Wagner, from one to four years old, in hardy trees, not one of which were killed." While the above testimony is highly satisfactory, I will say that with me, the Fameuse and Golden Russet, two of the varieties he recommends to top-graft into, would not do. Here those kinds kill too frequently to be depended upon, and we are compelled to resort to the crab or something equally hardy for this purpose. Much that I have written is the observation and experience of others, but is to such an extent confirmed by my views that I prefer to give them instead of my own. Many other facts might be stated of the same tenor but I will wait further developments.

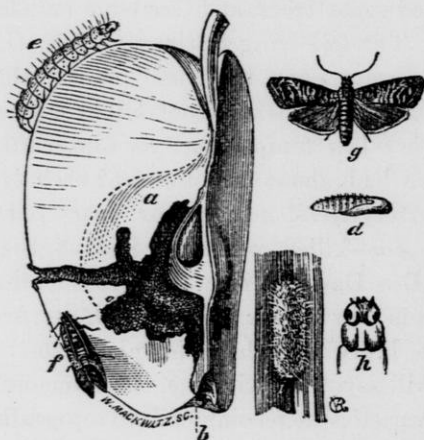
ENTOMOLOGICAL NOTES.*

PROF. W. W. DANIELLS, STATE UNIVERSITY.

THE APPLE-WORM OR CODLING-MOTH.—*Carpocapsa pomonella* Linnæus.—Of all fruit-destroying insects the codling moth is the most injurious, from an economical point of view, to the fruit-growers of Wisconsin. Scarcely an orchard in the State is free from its ravages, and doubtless more than half the apples that reach maturity here are "wormy." Its habits are well known, as are also efficient methods of destroying it. Its universal prevalence is the result of almost universal negligence. The following cut and description are from the "First Annual Report of the Noxious and Beneficial Insects of Missouri," by C. V. Riley, State Entomologist:

"The figure represents it in all its states, and gives at a glance its natural history: *a* represents a section of an apple which has been attacked by the worm, showing the burrowings and channel of exit to the left; *b*, the point at which the egg was laid and at which the young worm entered; *c*, the full-grown worm; *d*, its head and first segment magnified; *e*, the cocoon which it spins; *f*, the chrysalis to which it changes; *g*, the moth which escapes from the chrysalis, as it appears when at rest; *h*, the same with wings expanded."

Fig. 1.



The worm when young is whitish, with usually an entirely black head, and a black shield on the top of the first segment. When full-grown it acquires a flesh-colored or pinkish tint, especially on the back, and the head and top of first segment become more brown, being usually

*The following notes are compiled at the request of the secretary of the Horticultural Society, F. W. Case, Esq. They are mostly taken from the excellent annual reports of C. V. Riley, State Entomologist of Missouri, although Harris' *Insects Injurious to Vegetation*, Packard's *Guide to the Study of Insects*, and Fitch's *Reports of Injurious and Beneficial Insects of New York*, have also been used. The cuts are the property of the society, drawn by Riley. It is hoped these notes may be of some use in calling the attention of fruit-growers and farmers to the habits of a few insects that are injurious, and to methods of destroying them, and so lead to the adoption of means for diminishing one prolific source of loss.

marked as at *h.* in the figure. The cocoon is invariably of a pure white color on the inside, but is disguised on the outside by being covered with minute fragments of whatever substance the worm happens to spin to. The chrysalis is yellowish-brown, with rows of minute teeth on its back, by the aid of which it is enabled to partly push itself out of its cocoon when its time to issue as a moth arrives. The moth is a most beautiful object. Its fore-wings are marked with alternate, irregular, transverse wavy streaks of ash-gray and brown, and have on the inner hind angle a large tawny-brown spot, with streaks of bright bronze color or gold." The moth is seldom seen, as it flies in the evening. The "worm," as it is called, is a caterpillar, and may be known from other apple-eating larvæ by its having six horny legs near the head, eight fleshy legs near the middle of the body, and two near the hinder extremity of the body.

The codling-moth is usually two-brooded, the second brood of worms passing the winter in a larval state, within the cocoons, and protected further by the bark, or other shelter beneath which the cocoon is usually attached. These larvæ are hatched about the time of the blossoming of the apple. The moths soon pair, when the female deposits its egg in the calyx of the apple. This occurs about the time of the dropping of the blossom. The worm eats its way to the center of the fruit, and through the fleshy portion, gradually developing until it has reached its larval growth. Riley says "In thirty-three days, under favorable circumstances it has become full fed; when leaving the apple, it spins up in some crevice; changes to a chrysalis in three days, and issues two weeks afterwards as a moth, ready to deposit its eggs again, though not always in the favorite calyx this time, as I have found the young worm frequently entering from the side." The time required for the hatching of the chrysalis, varies considerably, depending upon the temperature, being shorter as the weather is warmer. Mr. Riley says, "while some of the first worms are leaving the apples, others are but just hatched from later deposited eggs, and thus the two-broods run into each other, but the second brood of worms (the progeny of the moths that hatch out after the first of July) invariably passes the winter in the worm or larval state, either within the apple after it is plucked, or within the cocoon."

REMEDIES.—The greater portion of fruit infested by the worm,

falls before the worm has left it. Hence, any means of destroying this fruit will, in so far as it contains the worms, diminish their numbers. This may be done by allowing hogs to run in the orchard to eat the fallen fruit, or such fruit may be picked up by hand, and scalded or fed to swine. But as many worms escape from the apples before falling, and many more would doubtless escape after falling and before being destroyed, this means of destruction is at best only a partial preventive.

A much more effectual method is to entrap the larvæ by placing something convenient beneath which they will spin their cocoons. I quote again from Mr. Riley. "This can be done by hanging an old cloth in the crotches of the tree, or by what is known as Dr. Trimble's hay-band system, which consists of twisting a hay-band twice or thrice around the trunk of the tree." To make this system perfectly effectual, I lay down the following rules:

1. The hay-band should be placed around the tree by the first of June, and kept on until every apple is off the tree.

2. The hay-band should be pushed up or down and the worms and chrysalids crushed, that were under it, every week, or at the latest, every two weeks.

3. The trunk of the tree should be kept free from old, rough bark, so as to give the worms no other place of shelter.

4. The ground itself should be kept free from weeds and rubbish.

"But as already stated, many of the worms of the second brood yet remain in the apples even after they are gathered for the market. These wormy apples are barrelled up with the sound ones, and stored away in the cellar or barn. From them the worms continue to issue, and they generally find plenty of convenient corners about the barrels in which to form their cocoons. Hundreds of these cocoons may sometimes be found around a single barrel, and it therefore becomes obvious that, no matter how thoroughly the hay-band system had been carried out during the summer, there would yet remain a sufficiency in such situations to abundantly continue the species another year. And when we consider that every female moth which escapes in the spring, lays from two to three hundred eggs, and thus spoils so many apples, the practical importance of thoroughly examining, in the spring of the year, all barrels or other vessels in which apples have been stored, becomes

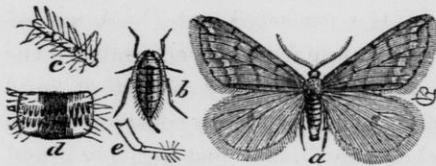
at once apparent. It should, therefore, also be made a rule to destroy all the cocoons which are found on such barrels or vessels, either by burning them up or by immersing them in boiling water.

The philosophy of the hay-band system is simply that the worms in quitting the fruit, whether while it is on the tree or on the ground, in their search for a cozy nook in which to spin up, find the shelter given by the hay-band just the thing, and in ninety-nine cases out of a hundred, they will accept of the lure, if no other enticing be in their way." Old pieces of sacking, and bands of two or three thicknesses of strong brown paper, tacked closely around the tree, have often been substituted for the hay-bands, with success, while they require less time in preparation. There is no doubt that this system, carefully carried out, will greatly diminish the number of wormy apples, and if generally adopted by a neighborhood would in a short time nearly exterminate this great pest. The one thing necessary is, that every man who has bearing apple trees, should attend to this business in its season, and in a short time the number of moths would be so reduced as to make the keeping them in check a much less serious business. Let no man wait to begin another year.

THE CANKER-WORM, (*Anisopteryx vernata*, Peck. *Paleœrita vernata*, Riley).—This insect which has done so great injury to fruit and shade trees in the eastern States, has become well established in many localities in Wisconsin. Unlike the codling-moth, it attacks the trees rather than the fruit, and attacks the plum, cherry, and elm, as well as the apple.

The male moth, Fig. 2, *a*, is winged; the female, *b*, is wingless. The wings of the male are ash-colored. The fore-wings are crossed

Fig. 2.



by three jagged, dark lines (Riley), they expand about one and one-fourth inches. Late in autumn, and early in the spring, the male flies about, and pairs with the wingless

female. "Soon after, the wingless female lays her eggs upon the branches of the trees, placing them in rows, forming clusters of sixty to one hundred, the number usually laid by each female. The eggs are glued to each other and to the bark, and the clusters are thus fastened securely in the forks of the small branches or close

to the young twigs or buds. The eggs are usually hatched between the first and the middle of May, or about the time that the red currant is in blossom, and the young leaves of the apple tree begin to start from the bud and grow. The little canker-worms, upon making their escape from the eggs, gather upon the tender leaves, and, on the occurrence of cold or wet weather, creep for shelter into the bosom of the bud, or into the flowers, when the latter appear." (Harris' Insects Injurious to Vegetation.)

These worms belong to the group known as geometers, span-worms, or measuring-worms, so called from their having legs only at the extremities of the body and the consequent method of progression by first reaching forward and grasping with the fore-legs, and looping the body as the hind-legs are brought forward. "This worm when mature is about an inch long, ash-colored on the back, black on the sides, and beneath yellowish." (Packard.)

Figure 3, *a*, full grown larva; *b*, egg enlarged, the natural size shown in small mass at the side; *c*, an enlarged joint, side view; *d*,

the same, back view, showing the markings. The larvæ vary greatly in the intensity of their markings. They cease eating when about four weeks old, which in this latitude would usually be during the last half of June. It then creeps down

the trunk of the tree, or lets itself down by a thread, and burrows in the earth, from two to six inches in depth, where it forms a rough, earthy cocoon, and changes to a chrysalid.

It remains in this condition until late in the autumn, or the following spring. Harris says, "the occurrence of mild weather, after a severe frost, stimulates some of these insects to burst their chrysalis skins and come forth in the perfected state." A severe frost seems to be necessary to this change from the chrysalis to the moth, and such change may occur during any period of mild weather during the late fall, winter, or spring. They come out of the ground mostly in the night, when the female instinctively crawl to the nearest tree, during the ascent of which the male usually finds her, and the coupling occurs. After laying her eggs, as above stated, the female dies.

The remedy for this insect is founded upon the wingless condition of the female. Her only object is to deposit eggs for another



generation of worms. These eggs must be deposited near the food, that is to nourish the young larvæ, that is upon the limbs of the trees. The female moth can only reach these limbs by crawling up the trunk of the tree, hence any means that will prevent this ascent will be an effectual remedy, except as the newly hatched worms may be able to pass such barrier. Many methods have been devised to accomplish this object, but that which is at once the cheapest and most effective, is the application of a semifluid, adhesive substance, either directly upon the body of the tree, or better, if care is taken to make such bandage close to the tree, that nothing may pass behind it, upon coarse cloth or paper. Tar, refuse printer's ink, melted india rubber, molasses, have all been recommended. The essential condition is, that the substance shall be soft and sufficiently viscid to entangle and hold the feet of the female moth. Tar hardens quickly and needs to be renewed often; melted rubber retains its viscidness, and is consequently much better. The remedy must be applied during warm weather, after the first severe frost in the fall, usually as early as the middle of October, and the application must be kept sticky by renewals during all warm weather, until the trees are in full leaf the following spring. As application of many adhesive substances directly to the bark, may prove injurious to the tree, it is always safer to make the application as before stated, upon cloth or paper closely bound about the trunk. On account of its habits, the canker-worm is much more local than the codling moth, and each fruit-grower is much less dependent upon the conjoint efforts of his neighbors for its extermination, than with that insect. There are many methods, however, by which it may spread from orchard to orchard, even though the female be wingless. The most ready means is doubtless by carrying the larvæ, as they are caught when spinning down from the tree, by passing carriages, upon the backs of animals or man, or by umbrellas, etc. Yet by careful and determined effort, when once they have become established, they may be entirely eradicated in two or three years.

There are several natural insect enemies of the canker-worm. Among these are several species of ichneumon-flies, a large ground-beetle (*calosama scrutator*), having beautiful golden-green wing-

covers, and Riley mentions another beetle of the same genus, (*callosoma calidum*), having copper-colored spots on the wing-covers, figured upon a succeeding page, as having been seen by him preying upon this insect. Many of the larvæ are also devoured by birds.

CUT-WORMS.—In his first annual report of the Noxious and Beneficial Insects of Missouri, Riley described twelve species of cut-worms. Hence “the cut-worm” is only one of the twelve species, the peculiar habits of which can only be given by knowing the particular species referred to. Each of these twelve species is a caterpillar, the larva of a moth, which feeds during the night, remaining just beneath the surface of the ground during the day. They are called cut-worms from their habit of cutting off the stem or other portion of the plant on which they feed. Riley says of these caterpillars, “all of them are smooth, naked, and greasy-looking worms of some shade of green, gray, brown or black, with a polished, scaly head, and a shield of the same color upon the top of the first and last segments; while most of them have several minute shiny spots on the other segments, each spot giving rise to a minute, stiff hair. They have the habit of curling up in a ball when disturbed. They produce moths of sombre colors, which are known as Owlet or Rustic moths. * * * * *

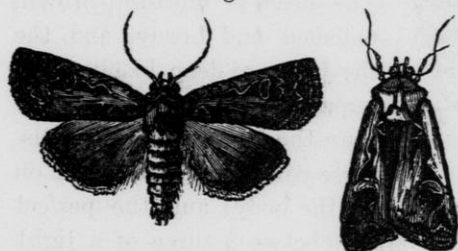
These moths fly for the most part by night, though some few of them may be seen flying, especially in cloudy weather. They frequently, even in large cities, rush into a room, attracted by the light of gas or candle, into which they heedlessly plunge, and singe themselves. They rest with the wings closed more or less flatly upon the body, the upper ones entirely covering the lower ones, and these upper wings always have two, more or less distinctly marked spots, the one round, the other kidney-shaped.”

“The natural history of most of these cut-worms may be thus briefly given. The parent moth attaches her eggs to some substance near the ground, or deposits them on plants, mostly during the latter part of summer, though occasionally in the spring of the year. Those which are deposited during late summer, hatch early in the fall, and the young worms, crawling into the ground, feed upon the tender roots and shoots of herbaceous plants. At this time of the year, the worms being small and their food plent-

iful, the damage they do is seldom noticed. On the approach of winter they are usually about two-thirds grown, when they descend deeper into the ground, and curling themselves up, remain in a torpid state until the following spring. When spring returns they are quite ravenous, and their cutting propensities having fully developed, ascend to the surface and attack the first green succulent vegetation that comes in their way. When once full-grown they descend deeper into the earth, and form for themselves oval chambers, in which they change to chrysalids. In this state they remain from two to four weeks, and finally come forth as moths, during the months of June, July, and August."

The accompanying cut (Fig. 4), represents the moth of one of our most common cut-worms, the *Agrotis sub-gothica*, of Haworth. Riley calls it, "The Western Striped Cut-worm." The markings may be plainly seen upon the moth with expanded wings, while the other figure shows the moth while at rest. The dark spots are

Fig. 4.



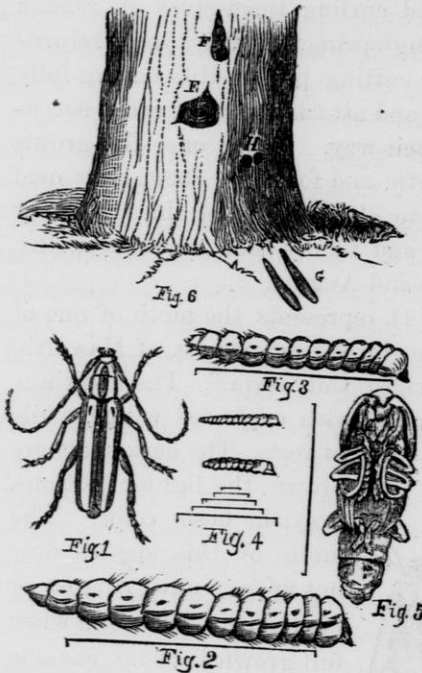
brown, the lighter portions, grayish flesh color. The moth of this species does not appear until August or September. The worm when full-grown is about one and one-fourth inches in length. "Color, dirty white or ash-

gray, with three broad dark lines, and two light narrow ones along the sides, and a light one, edged on each side with a dark one, along the middle of the back."—(Riley.)

There are several natural enemies to the cut-worms, among which are the ichneumon-flies, the parent flies of which deposit their eggs within the body of the worms, where they hatch and eventually cause their death. Riley says the spined soldier-bug, a cut of which is given on a succeeding page, also destroys them, as does the larva of the fiery ground-beetle. The ground-beetles, as a class, prey largely upon these worms. Poultry, as is well known, are of great assistance about a garden in destroying these, as well as other injurious insects.

THE ROUND-HEADED APPLE-TREE BORER. (*Saperda bivittata*, Say).—This insect is unfortunately so well known to most orchardists as to scarcely need a description. The accompanying cut (Fig.

5) represents, Fig. 1, the perfect beetle, Fig. 5, the pupa, and also Fig. 5.



the larva at different stages of growth, and the tree trunk, as injured by the larva. The following description is from Riley's first Missouri Report.—
 “The average length of the larvæ when full-grown is about one inch, and the width of the first segment is not quite $\frac{1}{4}$ inch. Its color is light yellow with a tawny yellow spot of more horney consistency on the first segment, which under a lens is found to be formed of a mass of light brown spots. The head is chestnut-brown, polished and horny, and the the jaws are deep black. The pupa is of rather lighter color than the larva, and has transverse rows of minute teeth on

the back, and a few at the extremity of the body; and the perfect beetle has two longitudinal white stripes between three of a light cinnamon color. The two-striped saperda makes its appearance in the beetle state during the months of May and June, and is seldom seen by any but the entomologist who makes a point of hunting for it, from the fact that it remains quietly hidden by day, and flies and moves only by night. The female deposits her eggs during the month of June, mostly at the foot of the tree, and the young worms hatch and commence boring into the bark within a fortnight afterwards. These young worms differ in no essential from the full-grown specimens, except in their minute size; and they invariably live, for the first year of their lives, on the sap-wood and inner bark, excavating shallow, flat cavities which are found full of their saw-dust-like castings. The hole by which the newly-hatched worm penetrated is so very minute that it frequently fills up, though not till a few grains of castings have fallen from it, but the presence of the worms may be detected, especially in young trees, from the

bark, under which they lie, becoming darkened, and sufficiently dry and dead, to form cracks. Through these cracks, some of the castings of the worm generally protrude, and fall to the ground in a little heap, and this occurs more especially in the spring of the year, when with the rising sap and frequent rains, such castings become swollen, and augment in bulk. * * * *

It is currently supposed that this borer penetrates into the hard-wood of the tree, after the first year of its existence, whereas the flat-headed species is supposed to remain for the most part immediately under the bark; but I find that on these points no rule can be given, for the flat-headed species also frequently penetrates into the solid heart-wood, while the species under consideration, is frequently found in a full-grown state under the inner bark, or in the sap-wood. The usual course of its life, however, runs as follows: As winter approaches, the young worm descends as near the ground as its burrow will allow, and doubtless remains inactive until the following spring. On approach of the second winter, it is about one-half grown, and still living on the sap-wood, and it is at this time that these borers do most damage, for when there are four or five in a single tree, they almost completely riddle it. In the course of the next summer, when it has become about three-fourths grown, it generally commences to cut a cylindrical passage upwards into the solid wood, and before having finished its larval growth, invariably extends this passage right to the bark, sometimes cutting right through a tree to the opposite side from which it commenced, sometimes turning back at different angles. It then stuffs the upper end of the passage with sawdust, like powder, and the lower with curly fibres of wood, after which it rests from its labors. It thus finishes its gnawing work during the commencement of the third winter, but remains motionless in the larval state until the following spring, when it casts off its skin once more, and becomes a pupa. After resting three weeks in the pupa state, it becomes a beetle with all its members and parts soft and weak. These gradually harden and in a fortnight more it cuts its way through its sawdust-like castings, and issues from the tree through a perfectly smooth and round hole. Thus it is in the tree a few days less than three years.

REMEDIES.—From this brief sketch of our Round-headed Borer, it becomes apparent that plugging the hole to keep him in, is on a

par with locking the stable door to keep the horse in after he is stolen; even supposing there was any philosophy in the plugging system, which there is not. The round, smooth holes are an infallible indication that the borer has left; while the plugging up of any other holes or cracks, where castings are seen, will not affect the intruder. This insect probably has some natural enemies belonging to its own great class, and some of our wood-peckers doubtless seek it out from its retreat and devour it; but its enemies are certainly not sufficiently under control, and to grow healthy apple-trees we have to fight it artificially. Here again prevention will be found better than cure, and a stitch in time will not only save nine, but fully ninety-nine.

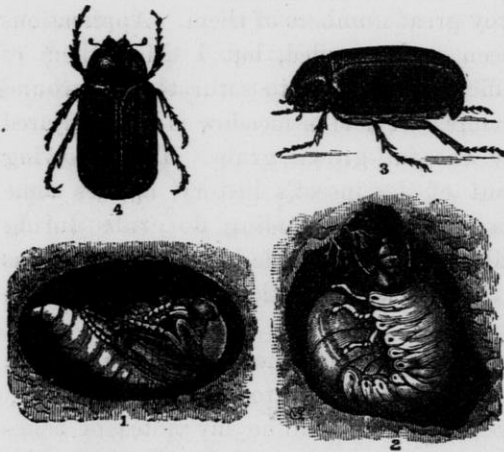
Experiments have amply proved that alkaline washes are repulsive to this insect, and the female beetle will not lay her eggs upon trees protected by such washes. Keep the base of every tree in the orchard free from weeds and trash, and apply soap to them during the month of May, and they will not likely be troubled with borers. For this purpose soft-soap or common bar-soap can be used. The last is perhaps the most convenient, and the newer and softer it is the better. This borer confines himself almost entirely to the butt of the tree, though very rarely it is found in the crotch. It is therefore only necessary, in soaping, to rub over the lower part of the trunk and the crotch, but it is a very good plan to lay a chunk of the soap in the principal crotch, so that it may be washed down by the rains. In case these precautions have been unheeded, and the borer is already at work, many of them may be killed by cutting through the bark at the upper end of their burrows, and gradually pouring hot water into the cuts so that it will soak through the castings, and penetrate to the insect. But even where the soap preventive is used in the month of May, it is advisable to examine the trees in the fall, at which time the young worms that hatched through the summer may be generally detected and easily cut out without injury to the tree. Particular attention should also be paid to any tree that has been injured or sun-scalded, as such trees are most liable to be attacked."

D. B. Wier, of Lacon, Illinois, treats his orchard as follows: "I will suppose that I have a young orchard, of any number of trees, say a thousand. The second season after planting, about the last of July, or during the first half of August, with a common hoe, I

take all the weeds and other trash, and about an inch of soil, from the crown of the trees; then, any time from the first to the middle of September, with a pocket-knife, I examine carefully the stem of each tree; the borer can readily be found by the refuse thrown out of the hole made on entering; this refuse of a borer of the same year's growth, will be about the size of a pea, and, being of a glutinous nature, sticks around the mouth of the hole, and can readily be seen; older ones throw out coarser chips that fall to the ground. When one is found, take the knife and cut him out. If an orchard is carefully examined in this way each year, there need be few, if any, borers missed; and, as they are more easily found the second fall of their growth, and can have done but little damage at that time, we would never receive any serious damage from them."

THE MAY BEETLE. (*Lachnosterna quercina*, Knoch).—The larvæ of this beetle, known as the "white grub-worm," are often the source of much damage to grass-lands which they injure by devouring the roots, so that in many instances the turf is entirely severed from its connection with the soil, and may be rolled up like a car-

Fig. 6.



pet. In the accompanying cut, (Fig. 6.) 2. represents the full-grown larva, 1. the pupa, 3. the beetle, side-view, 4 the same, back-view. The beetle appears in this latitude, the last of May and first half of June, sometimes appearing in great numbers, flying in the early evening and often entering houses, being attracted there by

the lamp-light. They feed in the beetle-state upon the foliage of plants, seldom, however, doing injury at this time unless present in great numbers. The following account of their habits is from Riley: "Their existence in the beetle-state is, however, short, and as they are confined to the foliage their injuries are exceedingly small compared with those which their larvæ inflict upon us. Our meadows, strawberry beds, corn, vegetables, and even young nurs-

ery-stock, are subject to the attacks of these white grubs, and are often ruined by them. Soon after pairing, the female beetle creeps into the earth, especially wherever the soil is loose and rough, and after depositing her eggs to the number of forty or fifty, dies. These eggs hatch in the course of a month, and the grubs growing slowly do not attain full size till the early spring of the third year, when they construct an ovoid chamber (Fig. 1, of the cut), lined with a gelatinous fluid, change into pupæ, and soon afterwards into beetles. These last are at first white, and all the parts soft as in the pupæ, and they frequently remain in the earth for weeks at a time till thoroughly hardened, and then on some favorable night in May, they rise in swarms and fill the air."

REMEDIES.—As natural checks and destroyers of this grub, may be mentioned the badger, weasel, skunk, marten, the crow and different hawks, but especially the ground-beetles among insects. Hogs are fond of them, and a gang may be turned into an infested meadow which is to be cultivated the next year, with advantage. The grubs sometimes so thoroughly destroy the roots of meadow-grass that the sward is entirely severed, in such cases a heavy rolling would doubtless destroy great numbers of them. Applications of ashes and salt have been recommended, but I think them of doubtful utility unless sufficiently applied to saturate the ground to the depth of a foot or more. A field or meadow is badly injured during a certain year by the full-grown grubs. The following spring the owner, ignorant of the insect's history, applies some substance to the land as a remedy, and finding no grubs during the summer following, will naturally conclude his application was effectual, when in reality the insects left of their own accord in the beetle state.

During their periodical visits as beetles they should be shaken from the trees, gathered up, scalded and fed to the hogs.

SOME BENEFICIAL INSECTS.—I shall confine my notes of beneficial insects to those of which the society already has cuts. A fuller account of these may be found in the Annual Report of the Wisconsin State Agricultural Society for 1870.

LADY-BIRDS.—These beetles destroy the eggs of many kinds of injurious insects, especially during their larval state. In their perfect state, these insects are well known, while the larvæ, although more beneficial, are not as well known. Fig. 7a, represents the 13-

spotted lady-bird, (*Hippodamia 13-punctata*, Linn), color, brick-red, with thirteen black spots; *b*, is the spotted lady-bird, (*Hippodamia*



maculata, DeGeer) color, pink, marked with black, as in the cut; *c*, is the 9-spotted lady-bird, (*Coccinella 9-notata*, Herbst), color, brick-red, with nine black spots. The lines

at the sides of the cuts represent the natural size (length) of the insects. Fig. 8 represents the larva, pupa, and perfect beetle of the convergent lady-bird, (*Hippodamia convergens*, Geer), which is orange-red, marked with black and white. The larvæ of these lady-birds may be known by Figs. 8 and 9. Their appearance is

Fig. 8.



rather repulsive, and on this account they are, doubtless, often destroyed by those who are not aware of their worth as destroyer of the eggs of other insects. The eggs of

Fig. 9.



these beetles are orange, and much like those of the

Colorado Potato-beetle, except being much smaller. Care should be taken that they are not destroyed with those of the potato-beetle.

Fig. 10.



Fig. 10 represents the Fiery Ground-beetle (*Calosoma calidum*, Fabricius). The larva of this beetle preys upon cut-worms, and other larvæ, while the perfect insect is also predaceous, destroying larvæ and perfect insect of the Colorado Potato-beetle. The color is black, with copper-colored dots on its wing-covers.

The Mucky Ground-Beetle, (figure 11,) is also predaceous in both the larval and perfect state.

Fig. 11.



It is of a dull, black color, and is represented in the cut life-size. The Elongate Ground-Beetle (*Pasimachus elongatus*, Leconte,) has the same habits as the preceding; color is black, edged with deep blue. Below are given cuts of four

Fig. 12.



insects, true bugs, which have beaks, instead of jaws, as beetles have.

These beaks are made to pierce an insect, when the juices of such

Fig. 13.



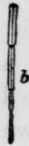
insect are pumped out by the bug, leaving only the harder, more solid parts. The Spined Soldier-bug, (*Arma spinosa*, Dallas), figure 13 *b*, with one pair of wings extended; *a*, represents its beak, color, ochre-

Fig. 14.



yellow. The Bordered Soldier-bug, figure 14. The natural size is represented by the line at the left. Colors, dark.

Fig. 15.



olive-green, and cream color. The Rapacious Soldier-bug, (*Reduvius raptatorius*, Say,) figure 15 *a*; *b*, beak of the same, is of a light brown color. Fig-

Fig. 16.



ure 16 *a*, the Many Banded-robber; *b*, side-view of its beak; colors are yellow, white, and black. The line on the left shows the insect's natural size.

TRANSACTIONS

OF THE WISCONSIN

STATE HORTICULTURAL SOCIETY,

AT THE

Annual meeting held in Madison, February 1 to 3, 1876.

AGRICULTURAL ROOMS, February 1, 1876.

The society was called to order at 7½ o'clock p. m., by President Tuttle, who delivered his annual address, which will be found on pages 9-14. Prof. Searing being unable to appear before the society, as announced in the programme, the secretary's report was called for, read and adopted.

JOINT CONVENTION.—In the remarks following the report, in relation to some of the suggestions made, Mr. J. S. Stickney said he was very much in favor of holding a joint convention with the State Agricultural Society. He, and doubtless many others, would like to attend both, but could not well spare the time as held at present; thought it would be advantageous to the society and would greatly extend its influence.

On motion of Geo. J. Kellogg, a committee of three was appointed to confer with the agricultural society in relation to the subject. The committee appointed were, J. S. Stickney, F. W. Case and J. M. Smith.

ILLUSTRATIONS.—In speaking of the fund appropriated for the illustration of the society's annual report, Mr. Stickney thought that it was time it was utilized. If properly used it would be very beneficial to the interests of horticulture.

Mr. J. C. Plumb being called upon, said, he was, and had always been, very enthusiastic on the subject of entomology; it was a study very much neglected, and of which very little was known. He was in favor of doing as they are now doing in the Illinois reports, taking up some branch of this science each year and making it very plain and simple; illustrating it with cuts of the insects beneficial and injurious, so that even our school boys can understand it and learn to distinguish between our friends and foes. The trouble was to know where to begin. He also suggested that it might be well to give cuts and outlines of new varieties of fruit for further reference.

FRUIT-DISTRICTS.—Mr. Kellogg suggested a committee be appointed in relation to our fruit-districts, to select lists of varieties adapted to each, and to specify the conditions and rules that should be observed in their location and cultivation.

President Tuttle said it would be difficult to adapt lists strictly to the districts; for in each, there was a great variety of soils and locations which should modify the list and conditions; thought it best to defer the matter until we had heard the reports of our committee of observation.

CENTENNIAL EXHIBITION.—In accordance with a motion made by G. W. Putnam, of Ash Ridge, Messrs. J. C. Plumb, G. P. Peffer, G. J. Kellogg, and President Tuttle, were appointed a committee to consider the question of a worthy representation of Wisconsin fruit at the Centennial Exhibition.

President Tuttle was satisfied that if we took hold of the matter right, we could make as good a display of fruit as any of the States. Notwithstanding the exceptional year and early date of the Pomological Exhibition, our display was very creditable. Had it been two weeks later, we could have taken the first, instead of the third prize.

Mr. Stickney gave an account of what Iowa horticulturists were doing. Last summer they commenced to prepare wax specimens of their fruit; had already two hundred and forty varieties to exhibit in this way in the summer, before their fruit matures; were also preparing lignariums, showing all their different kinds of timber.

Mr. Plumb said that the wood of our trees and the fruit buds had fully matured the past season, and we had good reason to expect the largest crop of fruit we ever saw in this State. He thought

we ought to take hold of it in earnest; if we did so, he had no fear of the result. Suggested that it would be well to exhibit the fruit from different parts of the State; as the southern, central, and northern portions, giving their latitude. The people at Chicago were much surprised to see the exhibition of fine grapes made from Green Bay and further north. The show of grapes sent to Chicago from Oshkosh, surpassed anything they had there. At the meeting of the Illinois Horticultural Society, they did not venture to recommend any variety of grapes for general culture but the Concord, and were much surprised to learn that we were able to cultivate so many varieties.

Mr. J. M. Smith, of Green Bay, said we could grow as good grapes in Wisconsin as in any State of the Union. He had seen much better display of grapes at fairs at Oshkosh, than was made at Chicago. They had grown good grapes seventy-five miles above Green Bay. It was years after the country was first settled before any attempt was made to raise grapes. Then a German attempted it, and everyone was surprised at the result. Now they regard it as the most sure crop of fruit; cultivators have failed to get a crop only once in eleven years. He said that with some, the Delaware was the favorite variety, yielding better than the Concord; gave an instance where a five-year old Delaware vine bore sixty-five pounds of grapes one season, and all of a superior quality. Men who had seen the fruit raised in California, and eastern fruit exhibited in the New York market, were surprised on seeing Delaware and other kinds of grapes for sale in the stores in the northern part of our State to learn that the fruit was grown in that vicinity; they admitted that in size of bunches and berry, and in quality of fruit it surpassed anything they had seen.

Mr. E. Wilcox, of Trempealeau, was very enthusiastic in respect to this Centennial Exhibition and wanted others to feel so too. We were proud of the record of the Iron Brigade in the war, three-fourths of which was from Wisconsin; we could do equally well in a show of apples and grapes, if we only set out for it. We should exert ourselves to make an exhibition of fruit which would be creditable to the State; not copy the example of Minnesota, make a poor show at Chicago and a good one at home, He had been called a fanatic in fruit-culture, but he firmly believed, that in spite of all that had been said, *we can grow good fruit*. We have many diffi-

culties to contend with, but by making special effort to secure hardy stock for our trees, and by selecting varieties that are adapted to the different locations, we shall succeed. Kansas, although she made a big show at the Pomological Exhibition a number of years since, had as great, if not greater difficulties to contend with. He had sent many trees of our hardy varieties there, crabs, etc., but the frosts, drought, winds and grasshoppers had nearly whipped them out of existence.

CRANBERRIES.—Mr. C. S. Whittier, of Camp Douglas, spoke of the great importance of the cranberry interest, and though much attention was now being directed to the subject, but little was known in relation to it, and he proposed that a committee be appointed to take the matter under consideration, and report to the society some plan of collecting information in reference to cranberry culture in our State.

A committee was appointed for this purpose, consisting of Messrs. C. S. Whittier, H. Floyd and J. T. Kingston.

Mr. Stickney thought that in view of the fact that much money was being invested in cranberry lands which were worthless, or nearly so, this committee should be instructed to make an exhaustive report. They should show how much and what land is adapted to cranberry culture, and give such information as will enable us to tell what is valuable, and what worthless, so that people may invest their money understandingly. He regarded the cranberry interest as of more importance than any other branch of fruit-culture in the State, except, perhaps, apples, and as we have a large area that seems to be adapted to its culture, a proper development of the business would do much to increase the prosperity of the State.

Mr. Whittier thought that the time would not permit the committee to make such a report at this session, but they would try to secure it at some future time.

INTEREST IN HORTICULTURE.—Mr. Smith had experienced much difficulty in keeping up an interest in their local horticultural society and wanted information as to the best method to do this.

Mr. Whittier, gave an account of the interest felt in horticulture by the Lemonweir Valley Society; they had held nineteen meetings in the last fourteen months, and had tried many experiments. There was no lack of interest with them; he thought much aid was derived from the rivalry, or commendable spirit of emulation between the different towns in the county.

Mr. Plumb said, that there was no interest like self-interest for this purpose; by being wide awake and enthusiastic on the subjects presented, both at the meetings and elsewhere, much might be accomplished, but thought the surer way to arouse interest, was to develop the practical, and pecuniary benefits resulting from horticulture.

The society adjourned until February 2, 9 a. m.

WEDNESDAY, 9 A. M.

The society was called to order by President Tuttle.

On motion of Mr. Finlayson, Mazomanie, the committee appointed to confer with the agricultural society in relation to a joint convention, were also authorized to make the arrangements needed for an exhibition at the State Fair. This committee were instructed to ask the same terms and conditions as were made last year.

TREASURER'S REPORT.—Mr. G. A. Mason, the treasurer, was present, and handed in the following report:

Annual Report of the Treasurer of the Wisconsin State Horticultural Society.

RECEIPTS.		
	Amount on hand at last report.....	\$354 38
	Received from secretary for memberships.....	39 00
		<u>393 38</u>
1875.	DISBURSEMENTS.	
Feb. 4...	Voucher No. 77, Morrow's salary.....	100 00
Feb. 4...	Voucher No. 78, bills for printing.....	5 00
Aug. 31...	Voucher No. 79, J. C. Plumb, for Chicago Exhibition.....	30 00
Sept. 7...	Voucher No. 80, J. C. Plumb, for Chicago Exhibition.....	30 00
Oct. 4...	Voucher No. 81, printing for Chicago Exhibition.....	7 50
Oct. 4...	Voucher No. 82, postage.....	12 00
Oct. 20...	Voucher No. 83, binding.....	5 00
1876.		
Jan. 21...	Voucher No. 86, State Journal, printing.....	12 50
	Total.....	<u>207 00</u>
	Balance cash on hand.....	186 38
		<u>393 38</u>

Respectfully submitted,

MADISON, February 2, 1876.

GEO. A. MASON, Treasurer.

This report was referred to a special committee, who, after examination of the vouchers, reported it to the society as correct, and it was accepted and adopted.

The reports of the committee of observation were called for, and Mr. H. M. Thompson gave the one for the first district; the Secretary read those sent in for the fifth and eleventh districts, by E. W. Daniels and Samuel Rounseville.

UNUSUAL FORM OF APPLES.—These reports alluded to an unusual deformity of apples the past season, and President Tuttle remarked that many varieties had made an excessive growth, so as to be recognized with difficulty; the Red Astrachan, and Seek-no-Further were especially out of shape, being heavily ribbed.

Mr. Stickney said that the Northern Spy and Red Astrachan were very much deformed in shape, and were very small and gnarly, but other varieties had made an excessive growth.

This extra development, Mr. Peffer thought, was owing to late summer growth; after the fruit had nearly reached its full size, the rains, and warmer weather came on, furnishing an extra supply of sap to the trees, which was forced into the fruit and it had to swell out as it could.

Mr. Plumb had never seen so great variation in fruit, both as to shape and color, as the past season; some varieties bore little resemblance to their usual appearance. At the Illinois horticultural meeting, there was an apple called a Greening exhibited, thought by some to be a new variety, but on cutting, it proved to be the Northern Spy. Where the growth is steady and uniform throughout the season, the apples are of the usual form and color; he agreed with Mr. Peffer as to cause of peculiar shape the present season.

Mr. Stickney read a paper on "Horticultural Observations."

PLUMS.—At the close of it he suggested noting down facts observed each day. He thought by so doing our committee of observation and each one of us would learn much, and could bring a good report to our next meeting. On visiting an orchard or nursery he always learned something; spoke of his change of opinion as to the merits of the Miner or Hinkley Plum; it had uniformly failed with him, and he thought little of it, but the past season he had seen trees loaded with good, fair fruit; he had come to the conclusion that the trouble was in the age of his trees; they do not bear well when young, and we should give it further trial.

President Tuttle said the trees needed age to bear well; when young, they drop their fruit and yield but little, and the quality of fruit is inferior. On this account some who had tried to grow them had become dissatisfied and dug up their trees. There were trees near him which had been set over ten years, that for the last two or three years had borne well. The fruit had been stung by the curculio, a good deal, but no injury resulted; a small, black spot on the skin was seen, but the quality of the plum was not affected. Age improved the quality as well as the yield of fruit; it was increasing in favor in the market; the past season in Chicago, it found ready sale, and brought as good prices as the Green Gage variety.

Mr. Plumb regarded it as a valuable variety because it was curculio proof; when the trees had age they gained in strength and vigor and bore well. He suggested that it was good stock for top-working.

In reply to inquiries by Mr. Putnam, as to the best method of propagation and whether growing from suckers did not tend to depreciate the quality of the fruit, President Tuttle said the usual way was to propagate by suckers, and that it did not seem to injure the fruit; it could be raised in other ways, but this was the easiest.

Mr. Stickney said the opinion that it could not be grafted was a mistake; it could be done, if care was taken not to injure the bark. In Iowa and Minnesota the variety is regarded with great favor. The Winnebago plum is of much better flavor to eat, but is objectionable, because it is so liable to injury from the curculio.

Mr. Hatch had tried both the DeSoto and the Hinckley, and found the first equally safe against the attacks of the little Turk, and it had an additional advantage in being earlier. Unless the location was favorable and the season early, the Hinckley would not always ripen, and he regarded it as a disadvantage that it ripened so late. People did not care for fruit so much out of season, hence there would not be much demand for it. He thought the better way to propagate, was by root-cuttings three or four inches in length, then the stock, both root and branch was all perfectly hardy. The De Soto was evidently a wild plum; there were many varieties of the wild plum in their section, of different colors and shapes, both free and cling-stones; some of them of excellent quality. Had tried the Wild Goose Plum but did not like it.

Mr. Phillips, preferred the De Soto to the Hinckley, because the fruit ripened earlier and the trees came into bearing sooner.

President Tuttle considered it an advantage to have the fruit mature so late, other varieties were out of the way, and it would always bring better prices than when in competition with them. He had had the same experience with other fruit; crabs especially, keeping them till the season was passed, he had realized much better prices.

Mr. Stickney called attention to the Harrison Peach; the fruit was of good quality and uniform in size; it bore well in Minnesota, and he thought it would be well to cultivate it here.

Mr. Plumb did not think the time of ripening was an objection, the late market would be the better for it, but when the trees were older the fruit would ripen earlier.

A paper on "The Siberian Apple—Its use in the Pomology of the Northwest," was read by Mr. J. C. Plumb.

Messrs. A. N. Seymour, G. V. Ott, and N. F. Lund, were appointed a committee to examine and report on the display of apples on the tables.

On motion of Mr. Plumb, Mr. A. R. Whitney, a delegate from the Northern Illinois Horticultural Society, was made an honorary member.

LOCATION OF SOCIETY MEETINGS.—The Lemonwier Horticultural Society again extended, through their delegate, C. S. Whitter, an invitation to the State society to meet with them.

Mr. Stickney was anxious to have a friendly and social feeling exist between the State and local societies; had no doubt but it would be pleasant and instructive to meet with them, yet he did not think it advisable to hold our annual meetings at any other place than Madison. Here we can meet the members of the legislature and confer with the State Agricultural Society, both of which were essential to the interests of the society. He thought it might be well to have a June meeting, as at Oshkosh a number of years since, but would favor giving more attention to the discussions and less to the show, as being more beneficial.

Mr. Kellogg presented an invitation from the Janesville Society to meet with them. He had been in favor of going to Tomah, but thought in view of the business that had come before us it was well that we had not. Was in favor of improving the opportunity of meeting in joint convention with the Agricultural Society.

Mr. Smith thought we ought to have two meetings a year; one in June and the other in connection with the agricultural convention.

General Lund was satisfied that it was the duty of the society to hold meetings in different parts of the State, where it would do the most good, but was opposed to changing the place of the annual meeting. He felt that we ought to have two or more meetings a year.

The subject was referred to the committee appointed to confer with the Agricultural Society in relation to a joint convention.

Adjourned till 2 p. m.

WEDNESDAY AFTERNOON, 2 P. M.

At the opening of the session J. C. Plumb, chairman of the committee to superintend the collection and exhibition of Wisconsin fruit at the Pomological Society Meeting in Chicago, read their report. Which was accepted and adopted.

On motion of Mr. Stickney, the thanks of the society were tendered to this committee and to those who had contributed to the show of fruit, for their liberality, and the creditable manner in which they had performed their duty.

The following committees were appointed by the president:

On nomenclature—J. C. Plumb, Wm. Finlayson, B. B. Olds, and John Barr.

On revision of the premium list—Geo. J. Kellogg, J. S. Stickney, and Geo. P. Peffer.

ELECTION OF OFFICERS.—The society now proceeded to the election of officers for the ensuing year. It being the preference of the members to dispense with a nominating committee, an informal ballot was taken for each of the officers, and the results were so nearly unanimous, that the ballots were declared formal, electing the following:

President—A. G. Tuttle, Baraboo.

Vice-President—J. M. Smith, Green Bay.

Recording Secretary—F. W. Case, Madison.

Corresponding Secretary—J. C. Plumb, Milton.

Treasurer—Geo. A. Mason, Madison.

Superintendent at Fair—Geo. J. Kellogg, Janesville.

Additional Members of Executive Committee—H. M. Thompson, St. Francis; M. Anderson, Cross Plains; E. Wilcox, Trempealeau.

A paper was read by J. M. Smith of Green Bay, on "Small Fruits—the Improvements needed in Culture and Varieties."

SMALL FRUIT CULTURE.—In the remarks following the reading of this paper, Mr. Plumb said, the plan advocated by Mr. Smith, was to give very high culture, and thus to crowd the plants to the extreme of productiveness, and yet he wanted them to be hardy enough to do without protection. This system of cultivation was calculated to produce tenderness. The better way, as it seemed to him, was to raise fruit on land of medium quality, and give what extra culture was needed at the time when the fruit was maturing.

Mr. Smith said he had tried for a number of years to secure hardiness in raspberry plants. He believed in and practiced severe pruning; it tended to increase the vigor of the plant and also its productiveness. He gave an instance where, by his direction, a neighbor's vines were so severely cut back, that the owner thought there was not much left to bear fruit. One strong plant, had fared so hard, so many of the shoots being cut out, and those left pruned back very short, that the owner thought it was spoilt, but when the fruiting season came, it was covered with a mass of berries, and they gathered from it, six quarts at one picking. His son had, the past season, succeeded in getting an immense crop of berries by bending the plants down and giving protection. His own plants, not treated in this way, had not done as well. Mr. Smith favored high culture because it was profitable; he wanted a crop that will bear crowding, because he received better pay for the labor expended. He had tried to cultivate blackberries, but found, that like the wild Indian, they would not bear civilizing. They grew so abundantly in the country about there, that it did not pay to cultivate them.

Mr. E. Wilcox presented the report for the ninth district.

DOUBLE WORKED STOCK.—In connection with this, he gave an account of his efforts to secure stock, hardy enough in both top and root to withstand the arctic climate of his portion of the State. He wanted something much hardier than iron-clads; and is still of the opinion that if obtained at all, it must be by double-working on crab-stock, thus getting roots and trunk that will stand the test. His experiments had not been as successful as he would like, but he was sure success was in that direction. He had great faith in deep-

setting, as in this way, the stock grafted on the crab-root would itself take root and add to its hardiness.

President Tuttle thought that in unfavorable locations the system adopted by Mr. Wilcox might do well. He believed in deep setting, where the soil would admit of it; would set four inches lower than in the nursery. There are two elements of success in apple-culture, which should be kept in mind; one is the character of the soil, and the other, the location. He is confident that we have soil which is as well adapted to the orchard, as any State in the Union; and there are many locations where we can raise even the less hardy varieties with good success. We have locations where the mercury does not fall more than twenty degrees below zero; in 1864, on his place, it fell to thirty degrees below; the winter of 1874-5, the lowest was twenty-six degrees below. He thought Mr. Wilcox should be encouraged in his efforts to secure trees hardy enough to be reliable in places where it is now difficult to make even the Iron-clads live.

Mr. Wilcox said his experience had proved the necessity of this system of culture. In 1873, out of sixty-five thousand trees in his nursery, all died but ten thousand, and what saved these, was, they stood on their own roots. He found it much better to follow this mode of propagation, even if he did lose twenty per cent., than to lose the whole, the other way. He had found some difficulty in working on crab stock, as some varieties would not unite well, but there were many kinds that would.

A paper entitled, "For the good of the Order," was read by A. C. Tuttle, of Baraboo.

PRUNING.—The subject of pruning being suggested by this paper, President Tuttle was called upon to give his opinion as to the best time to prune. He said he had tried different times in the year; had pruned in June and in the summer, but much preferred to do it the latter part of March. It should not be done until the hard freezes were over, as they would injure the tree, especially where large limbs were cut off, and if left much later the sap would flow, causing the wood to turn black, and eventually decay; when the pruning was done the last of March or the first of April, the wound seared over before the sap commenced to flow and the wood being hard and sound, healed readily. He did not believe in the

use of paint or any composition to apply to the wound; it prevents the wood from hardening and induces decay.

Mr. Wilcox testified to having seen where friend Tuttle had made savage use of the axe, but the wood was hard and white, with no sign of a flow of sap.

Mr. Peffer presented a paper on the subject, "What Varieties of Fruits, Adapted to the Different Parts of the State, can be Raised Cheaply and Profitably."

PEARS having been mentioned in the paper read, Mr. Kellogg said he wanted to amend his "five dollar" statement which had been quoted so much, and make it ten dollars, as the aggregate cost of every pear grown outside of the lake counties of the State.

President Tuttle said he had had forty or fifty pear trees, mostly Flemish Beauty, in his orchard for over ten years, and never lost but one by winter-killing. Had one Beurre tree that had stood for twenty-one years. At first there was no trouble from blight, but now great loss resulted from it. He thinks that with his location and soil, it pays to raise pears; if the blight kills the trees, he would plant more, being satisfied that they would yield enough to pay for themselves. Regards the Early Bergamot as very superior, yielding well and especially hardy; also has great faith in Clapps Favorite.

Mr. Adams agreed as to the value of Clapps Favorite; with him, it bore the winter of 1872-3 unharmed, while Flemish Beauty in the same orchard were nearly all killed.

Mr. H. Floyd of Berlin, said that he first began to cultivate pear trees twenty years ago; had set out trees four or five times since, and had been very successful up to two years ago; a few years ago he had one hundred and seventy five trees killed by blight. Did not regard Clapps Favorite as hardy as Flemish Beauty, for where grafted into Flemish Beauty, the grafts all killed out, while the trees were uninjured.

Mr. Peffer had tried both varieties, setting them out alike; the Clapps Favorite were all killed above the snow, the others were not injured. He understood that Mr. Barr, of Jefferson, had succeeded well in grafting Clapps Favorite on the Flemish Beauty.

Society adjourned.

WEDNESDAY EVENING, 7:30 O'CLOCK.

When the society had come to order, Mr. Stickney remarked that death had entered the household of two influential members of our society, and moved that a committee be appointed to express our sympathy with the bereaved. The chair appointed Messrs. F. A. Lawrence and J. M. Smith such committee.

On motion, J. M. Smith and J. S. Stickney, were added to the committee on Centennial Exhibition.

CRANBERRIES.—The subject of cranberry-culture was presented in a paper by Mr. H. Floyd, of Berlin.

At the conclusion of the paper, Mr. Floyd, in answer to inquiries, said he regarded it as very essential to success, to flood the vines; the water should generally remain on till about the first of June; some years, needs draining off earlier than others; if the weather is warm so as to warm the water, the vines will commence to grow before it is drawn off. The vines should not be uncovered until the danger from late frosts was passed. When the vines were flooded there was not much trouble from the cranberry-worm; sometimes it spread from the vines around the edges or patches not under the water; the fire-worm generally feeds on the tender shoots; it is very active, and will drop to the ground on the least disturbance. The eggs are deposited the last of July and the first of August; the miller is of a light, gray color, about the size and some like the codling-moth; they are sometimes found in the woods, away from the marshes. In setting, uses an adze, making a slanting cut, so that the ends of the vines set will lie on the top of the ground; usually gives two blows with the adze, so as to make a wider cut, and puts in two or three vines in each, spreading them so that they will start out in different directions, and the sooner cover the ground. If set three feet apart it usually takes three years to fully occupy the ground. No trouble in making the vines live, as they grow very readily from even small cuttings; can set at any time. He had seen the fruit-worm, but never suffered any loss by it. It is sometimes necessary to remove the old wood, as it loses its vigor by age; young wood bears all the fruit, and the yield is much better where the main vines are comparatively new. Some of the marshes near Berlin are less productive from the vines being too old.

If sage gets into the marsh, it is necessary to remove it or it will

run out the vines; this is best done by scalping; can use a hay-knife, and by cutting the bunches of sage roots through and through, pull them out.

He much prefers to scalp the marsh before setting out vines. This is very readily done by a scalping-plow, cutting from sixteen to twenty inches wide, and from three to four deep. The sod can then be removed or turned over and rotted. By this process the grass is removed, which would otherwise retard the growth of the vines, and a smooth surface is thereby secured; this he regarded as of much importance, for the strength and vigor of the vines were greatly increased by their taking root from the joints at short intervals, and they will more readily do this on a smooth surface. In this way they will spread much more rapidly. He had traced a single vine for seventeen rods, rooting from point to point.

Would not gather the berries with a rake, as this greatly injures the vines. A good picker will average about three and one-half bushels a day, where the yield is four hundred bushels to the acre.

He considers eight hundred bushels to the acre a good crop. Mr. Mason gathered four thousand barrels this year; suffered a good deal from the August frost. Saved some of his berries by burning tar on the marsh; thought the smoke spread over the marsh and prevented the frost from doing as much injury as it otherwise would; thought he saved more than enough to pay the expense.

He said that there were many different varieties of berries on the same marsh, of different sizes, shapes, and colors; some ripen three weeks earlier than others; some are nearly solid, others more or less hollow; he thought selections might be made from these and much greater yield and better berries be obtained.

The soil of these marshes is a mixture of sand and peat; they were evidently the beds of lakes; the bogs or beds of peat in the different marshes were of different ages, and varied in maturity and consequently in their adaptability to cranberry culture, and in the facility with which they can be improved. When the marsh is scalped and set to vines, he thought the average cost was about \$25 per acre. The cost of ditching, draining, making the necessary dams, varied greatly according to the lay of the land and the condition of the marsh.

Mr. Whittier gave many additional interesting items, illustrating the importance of a free supply of water and the requisite prepara-

tion of the land by grading and ditching, so as to secure the proper control of it; also describing the special advantages of cultivating the cranberry, and other fruits adapted to the same localities, together. These points he promised to embody in an article for our volume.

Mr. Peffer said he had cultivated cranberries since 1853; found that they grew readily from cuttings, even on clay soil; had found difficulty in the frost heaving the ground, and covering the vines with muck where he scalped the marsh.

CENTENNIAL EXHIBITION.—The committee on Centennial Exhibition reported, as the result of their conference with the commission, that they had regarded our request for an appropriation of not less than \$500, favorably, and it would be granted, in case the bill pending in the legislature passed, and they advised to go to work earnestly to prepare for the exhibition.

Remarks from a large number followed, showing a warm interest in, and a desire to see the work well done and our State fully represented in the approaching International and Centennial Exhibition.

On motion, the previous committee were continued, and the whole matter referred to them for the prosecution of the work.

The society adjourned till Thursday, 9 a. m.

THURSDAY, 9 A. M.

The society met at the usual hour, when Mr. J. C. Plumb, gave his report for the second fruit-district, which was followed by the report for the twelfth district, by J. M. Smith. Both reports were very interesting and contained many valuable statistics and items.

FRUIT IN NORTHERN WISCONSIN.—At the close of his report, Mr. Smith spoke of some of the difficulties they had to encounter in their northern location in fruit-raising. Currents do well there, and will continue to thrive even though neglected and abused; grapes were a very sure crop, if properly cared for; had not known but one failure in eleven years; certain varieties of apples can be cultivated with success, others cannot; much seems to depend on the kind of location and soil, as well as care; many trees that had borne well for years had lately been killed or severely injured; he

spoke of a number of instances where pear orchards had done well; one in particular had paid for itself many times in the fruit it had yielded. This orchard stood without any protection at all, in a very exposed situation, on the side of a ravine facing the north or northwest, with the sides so steep as to require terracing; the soil was poor, but the trees were well set and attended to up to the time when they came into bearing. Since that time the property has changed hands, and they have taken care of themselves, but have done well, yielding well and looking thrifty. The variety most used is Flemish Beauty.

The next paper read was entitled "The Observations of a Novice," by Mr. A. L. Hatch of Ithaca.

HYBRIDIZING.—Some of the suggestions in this paper on hybridize the common apple and the Siberian called out Mr. Peffer, who said that by using the pollen from the crab, the fruit resulting would be nearly all crab; he had a Golden Russet seedling fertilized by the Red Siberian, and the apples, while in form and outside appearance resembling the Russet, are no larger than the Red Siberian, and are nearly as crabby in flavor. The improvement should always be sought, by selecting the hardiest and best growing variety for the female, for we want vigor and strength of constitution, and for the male, the best variety we can find for the object we have in view, whether it is quality, earliness or lateness. This principle should be followed whether it is fruits, flowers, or any breed of stock that we desire. If Siberians are used for the female, there will be a great improvement in them, and these hybrids can be used as the female again and again to secure size, flavor or other desired qualities. By selecting the best on both sides in this way, he had faith to believe that we shall yet secure varieties, that will prove hardy in the greater portion of the State, and yield abundance of fruit.

Mr. R. J. Harney, of Oshkosh, read a paper on "Grape-Culture," giving much valuable practical experience on the subject, and which led to an interesting discussion.

GRAPE CULTURE.—Mr. Greenman thought the first requisite of success in the cultivation of the grape was to secure strong and healthy vines; if when first set they had but little vigor, few fibrous roots and a feeble growth of top, it would be years, if ever, before

they would secure the necessary strength to be productive. This was the case with many of the vines that are now sold. Vines should have an abundance of fibrous roots and the buds on the canes should be strong and well developed when first set.

Mr. Floyd said that they were very successful in growing grapes in his section, but the birds were very troublesome; they had lost nearly all their Delawares for the last five years in this way. The trouble had become so great that some had dug up their vines. The bird that does the most mischief is a small, brown bird, very shy, but it is impossible to frighten it off with the gun, and their number is so great that it would be useless to try to kill them.

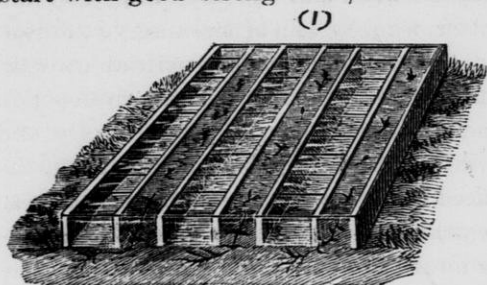
General Lund said that he had found the birds very troublesome; they would commence on the grapes as soon as they began to turn, and, if left alone, would destroy the whole crop. He found, too, that they had very good taste; would take the best every time, and would keep at them until they were gone, before molesting others; he was willing the birds should have some, but as he raised fruit for family use and wanted it, and the birds wanted it too, the only way he could secure his part was to protect it. This he did by covering the portion of the vine where the clusters hung with mosquito netting, by fastening it to the trellis above and pinning together below, bending the leaves down over the fruit. The expense might be too great when the vineyard was very large, but if the netting was taken care of, it would last for a number of years; another benefit derived from this plan is, the fruit ripens sooner and better when covered by the leaves and protected from the direct rays of the sun. He had been very much pleased with the paper just read and agreed with it in the main; but did not think a southern slope the best aspect for a vineyard. His experience and observation had proved that a northern slope was much preferable. The direct rays of the sun, and the hot, dry winds striking directly upon the vine causes the leaves and tender shoots to wither and curl, and thus retards the maturing of the wood and the fruit; he should select a northern slope for all kinds of fruit; there will be sufficient heat for the growth and maturity of both fruit and wood, and much less risk of injury from drought and mildew. When we have showers in hot, sultry weather, vines are apt to mildew, unless there is a free circulation of cool air through them to dry up the moisture; and a northern aspect is much more favorable for

these cool breezes; again on the southern slope, a portion of the day, the vines are exposed to the extreme heat of a tropical climate; this followed by our cool nights makes great changes in temperature, which are not favorable to strong and healthy growth. Some suppose that the grape is a tropical plant and requires a very warm location to grow to perfection, but this is a mistake; in the past season, although it was exceptionally cool, the fruit on all his vines except the Catawba, had ripened perfectly; other seasons he had usually ripened the Catawba on his grounds, where the slope was so much to the north that the sun did not shine directly on the vines until afternoon.

He believed in keeping the vines back in the spring as long as possible; many uncovered the vines early, under the mistaken idea that it was necessary to lengthen the season to secure ripe fruit, but keeping back in the spring does not retard growth; it tends to ripen the fruit earlier, because it keeps back the forces of the plant until all the conditions are favorable for growth, and then it pushes forward with increased vigor and strength; had measured the development of vines thus treated, and found that in thirty-six hours they had grown six inches; when uncovered early there is much danger of injury from frosts, and if the fruit-buds are not killed, the tender shoots are chilled and their growth checked, so that it takes some time to recover. He had often advised those who had uncovered early to re-cover and keep back as long as possible. His practice had been to keep the covering on until the second or third week in May. By examining the vines it can readily be determined when they should be uncovered; if the buds have commenced to swell and cannot be kept back any longer, then uncover and tie up to the trellises at once. Do not fear making the season too short by thus keeping back, as the vines are gathering force, and will push on to maturity with greater rapidity. In speaking of the pleasantness of the work of training and raising the grape, he remarked that he had always regarded it as a fitting and healthful employment for women, and alluded with much feeling to the great interest his departed wife had taken in caring for their vines the past season, and to the successful manner in which she had done the needed work.

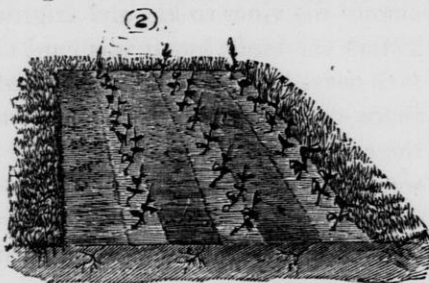
He had learned by experience that much of the success in cultivating the grape depended upon getting strong, vigorous vines at

the start. He had found it much better to throw away, even high priced vines, where wanting in vigor and strength, than to set them out, for much time and care would have to be expended to secure the needed vitality. Strong canes are far more productive than weak ones; one good, vigorous cane is worth more than a dozen small ones and the easiest and cheapest way to secure them is to start with good strong vines, with an abundance of fibrous roots,



and by care in pruning, concentrate their growth. He had found the solar hot-bed* invented by Mr. Greenman, very beneficial in securing good vines from cuttings; by its use he had grown yearling vines with more

roots and stronger canes than are usually offered in market on two and three year old vines; he had gathered fruit the third season from vines propagated in this way; the roots being under glass had all the stimulating effect of the hot-house, while the tops having been exposed from the start to the open air were perfectly hardy. Some varieties, like the Delaware, could not be grown successfully from cuttings in the open air in any other way.



The first year, he let the vines grow unpruned, but on setting out the second season, he confined the growth to one cane and

* SOLAR HOT-BED.—In the construction of these hot-beds, use strips of inch boards, four inches in width, setting them on the edge, and support by boarding up the ends; make the spaces covered with glass, eight or ten inches in width; five or six inches will be sufficient for the spaces where the cuttings are to be set. The glass may be fitted into narrow sash, and be laid over the wide spaces, or thin strips of lath may be tacked on the sides of the spaces to be covered with glass, just below the upper edge, and the panes be placed on these, either lapping or fitting close, end to end. For economy of space and material, it is better to regulate the width of the frame so as to have the outside spaces both covered with glass. Set two rows of cuttings in each open space, slanting them so that the lower end will be under the glass and the upper end just above the surface of the ground in the open spaces; be sure that the earth is in close contact with the lower end of the cuttings or they will fail to root. Fill in the open spaces with sawdust to the depth of three inches, covering the upper ends of the cutting. When they are well rooted and growth is well established, the frame may be removed, and the spaces covered with glass filled with straw, as shown in figure 2.

checked the laterals, so as to get a good cane, with strong, ripe buds. Some say, don't prune too much, by so doing you dwarf the vine and lessen the bearing surface; but he had found that by cutting back and pinching freely, he got more and better fruit; in this way the strength of the vine was developed right where it was needed for the production of fruit; but where the growth is distributed over a large space, the vines are weak and the buds imperfect and wanting in vigor. No matter what system of training you follow, it is essential to vigor and productiveness to concentrate growth.

Mr. Harney again affirmed his preference for a southern slope; in such locations the wood and fruit-buds ripened more perfectly, and the fruit matured earlier. He let the vines grow at random the first year; after that, practiced the renewal system, cutting back so as to have new wood each year. The laterals be pinched off, leaving two leaves, so as not to force the next season's fruit-bud.

The birds were a great drawback, and destroyed a great deal of the fruit. In some of the vineyards near Oshkosh, boys were kept among the vines to kill and frighten the birds; he did not favor killing the birds, but it was hard to have them take all the fruit.

General Lund recommended leaving only one leaf on the laterals; there was little danger in this way of starting the fruit-buds, as the extra growth was forced into the fruit and leaves, and these were so much increased in size as to furnish ample space for the expenditure of the vital force of the plant. In reply to an inquiry as to the time required to prune in this way, he said he never went near his vines in the summer without pinching them back; wherever he saw a new growth he pinched it. It was very easily and quickly done; each lateral would need to be clipped two or three times in the season, leaving a single leaf of the new growth each time. It was impossible to have a fixed rule as to length of vine above the bunches of fruit; you can not force the growth of Rogers No. 15 into the same space you can confine the Delaware. The character of the growth of the vine should regulate this, and experience and observation would soon enable us to determine how far to cut back.

President Tuttle had been compelled to change his opinion in regard to the best location for vineyards; at first he had favored a southern aspect, but practical experience had proved that it was the poorest. Concord will grow in almost any location, but many

of our varieties can not endure the strong heat and dry winds of our summers. In many locations, with a southern aspect, we have all the heat of the extreme south, which is detrimental to the vigor and productiveness of the grape. It is an erroneous opinion that the grape needs a tropical climate, it is a native of the temperate zone, and thrives best where the temperature is moderate. He had seen clusters of grapes, hanging on the north side of a fence or building, where they were partially shaded, which ripened earlier than those on the same vine which were exposed to the direct rays of the sun; this indicates that excessive heat is not necessary to secure mature fruit.

Mr. Clark remarked that he had set vines on a number of different slopes and could not determine which was best; they had done well in all positions, though the culture was very poor; he was really ashamed to receive such abundant crops in return for his neglect. His experience with apples had been very unsatisfactory; he had taken extra pains with his orchard; raised the trees from root-grafts; thoroughly prepared the ground; set the trees out with care, but all were gone except about one hundred and fifty Siberians, these had borne all the fruit, and were thrifty yet.

Mr. Lawrence said the best vineyards in Janesville were on ground sloping to the south and southeast; his own faced the southeast; was not troubled with mildew at all; whatever the slope, plenty of air is necessary; if we have this, there is no danger of mildew. He regarded the Lindley as a better grape than the Agawam or Salem, but the Delaware was, in his opinion, superior to all others; for a number of years he had advocated putting it first on the list, and now it was very gratifying to him to see that its merits were being acknowledged, and so many of his brethren were enthusiastic in its favor.

General Lund remarked, that he wished to change an opinion he had heretofore expressed as to the quality of the Sinawissa; he had regarded it as of poor quality; but it had ripened well with him the past season, and he must say that it was the most delicious grape he had ever tasted; would not recommend it for general cultivation, but thought it worthy of a place in the amateur list. He had not formed his opinion as to the respective advantages of a northern and southern aspect, from his vineyard alone, but had become convinced from what he had seen in other vineyards, that in hot, dry

seasons, those with southern aspect were, uniformly, more or less injured by the extreme heat of the sun's rays, and the hot, dry winds, and were more subject to mildew after showers in damp, sultry weather, because less open to cool breezes, and drying winds.

Mr. Floyd said he had always favored a southern slope, and had been led to this opinion from the fact that the healthiest and most productive vineyards in their section were located on such exposures. He thought much of Gen. Lund's success was due to the influence of the lake and his system of culture.

Mr. Plumb mentioned a number of vineyards and orchards in Madison and vicinity, a careful examination of which would throw some light on this subject of best exposure, and called on Mr. Ott to give his experience in grape-culture.

Mr. Ott, in response, stated that the vineyard he had set out on his lot, in this city, had proved almost a failure. The lots on which the vines were set faced the Third Lake, with southern exposure, and the direct rays of the sun, in the hot days of summer, caused the tender shoots to wilt and shrivel up, and in consequence the vines made a feeble and unhealthy growth. He had set vines on his farm, a number of miles from the city, on land nearly level, or slightly descending in various directions; did not see much difference in them; perhaps those on the highest point of the ridge were a little the best.

Mr. Harney thought our climate was especially adapted to the grape, and that almost any exposure was good. Experience had taught them that the southern was good, and they preferred it. In Mr. Vincent's vineyard, mildew was not known, and he thought they had no reason to apprehend trouble from it in their section.

Mr. Northrop was convinced that the location of Gen. Lund, on the banks of the lake, was a very favorable one, and that we could not expect the same success on other northern slopes, away from the influence of the water. He was a friend of the birds and thought that they were entitled to a portion of the fruit. Were he setting out berries or small-fruit plants, he would set enough, so that the wants of the birds could be supplied. We cannot over-estimate the benefit we derive from them. He cited an instance where the canker-worm attacked a portion of his orchard; they hatched out in myriads, and he expected to lose all his trees, but the birds came to his rescue, and only a very few worms survived.

Mr. Phillips said he could not approve of killing off the birds; we had already suffered much by so doing, in the increased depredations of cut and canker-worms, chinch-bugs, codling-moths, curculio, and other injurious insects; the birds are entitled to our care and protection, and it would be very foolish to destroy them because they take a part of our fruit, when it is only by their help that we are able to raise it at all.

Mr. Smith regarded the birds as of great assistance to us; he would not allow them to be killed or disturbed on his premises. Two or three years since the cabbage worm made its appearance in his garden, and destroyed nearly all his crop; they were so numerous and destructive that he had little hopes of raising any cabbage the next season, but following the worm, came a little bird, in large numbers; a kind that had not been common there before; they worked very busy all the spring in the garden where the worms had been so plenty; the consequence was the worms disappeared. Do not destroy the birds, they are our friends, and we can well afford to let them have a portion of our fruit.

Mr. Greenman, being called upon to give his experience as to the effect of heavily mulching the vineyard with straw, said, that the frost in August killed nearly nine-tenths of his vines; whether it was the result of the mulching, he was not prepared to say, but he would not recommend this system of cultivation without further trial; his opinion was, that it tended to promote an excessive growth at the expense of hardiness.

Society adjourned until 2 p. m.

THURSDAY AFTERNOON.

Meeting was called to order at 2 p. m. Vice-President J. M. Smith in the chair.

Rev. S. B. Loomis, as committee of observation for the fourth district, presented his report.

A very interesting paper on "Floriculture," prepared by Mrs. M. M. Davis, of Baraboo, was read by Mr. A. C. Tuttle.

This was followed by the reading of a paper by Mrs. H. M. Lewis, of Madison, on the subject of the "Arrangement of Flowers."

And one by Mrs. I. H. Williams, of Madison, on "Our Window Plants." All of which were listened to with great interest by the members and a large number of ladies present. The papers are given in full elsewhere.

CULTIVATION OF FLOWERS.—Mr. J. C. Plumb said that he had been greatly interested in the papers read, and was very much pleased with this feature of our meetings. He was not engaged much in the cultivation of flowers, but would give a good method of planting delicate flower-seeds in the open air for the benefit of those who were not experienced in the matter. Some seeds were hard to germinate, and would only do so well in hot-beds; but for the seeds of our common garden flowers, make a bed in some warm part of the garden, having it slightly elevated above the surface, four feet in width, and of any desired length. The soil should be finely commuted, and of good quality. When the surface of the bed has been finely pulverized, and is in good condition, begin at one end, and with a strip of lath, with the edge slightly rounded, make depressions of about a quarter of an inch in depth across the bed, and four inches apart; sow the seeds, using the whole package, or a part only, as may be needed; cover with very finely commuted earth to the depth of a quarter of an inch, not usually more; place the lath on the surface and gently press the soil down on the seeds; fill out the bed with as many different varieties as may be desired; place laths over each row of seeds, and if where exposed to the winds, put cross laths or stones on, for weights to hold them in place. Do not remove, to water, but sprinkle the whole surface, and sufficient moisture will extend under the laths, without danger of washing out or disturbing the seeds.

In from four to eight days the seeds will commence to germinate. When the weather is favorable, the laths may be turned over and lie by the side of the row, but should be replaced to protect from the heat of mid-day, if too warm, and from the chill of cool nights, until the germs appear above ground. Keep them in this seed-bed until they have reached a suitable size, and the conditions are favorable to transplant; then set where you wish them to bloom. By proper care and attention in this way, earlier and stronger plants can be secured.

Mr. Smith said, that though he was not able to attend to the cultivation of flowers, they were a great source of pleasure to him; it

was a great relief, a rest to mind and body, after the day's work was over, and he was tired of books, to go out and look at the beautiful flowers. His wife and daughter raised the flowers; every year a part of the hot-bed was assigned to starting the seeds, and the plants were cared for there, till the beds outside were prepared and the season favorable, when they were transplanted. In this way they secured strong, healthy plants, and had an abundance of bloom from early in the season until very late in the fall.

Gen. Lund contrasted the advantages and taste of twenty years ago, when he first came to Wisconsin, and now; the wanton destruction of trees had in a measure given place to setting out ornamental shade trees and shrubs, and great progress had been made in the variety and beauty, as well as extent of cultivation of our flowers. He appreciated the visit of the ladies, relieving the tedium of our session by bringing into it the beauties of home and its surroundings, and he hoped the practice might be continued in the future.

Mr. Whittier gave an account of what their local society was doing, and the increased interest in the cultivation of flowers and ornamenting of homes, resulting from their labors. Thought we did not give attention enough to the culture of rare plants and flowers, that do not need the sunshine. They had found a vine of this class growing in the thick timber, which he thought might be especially adapted to our sunless windows.

J. T. Clark and S. S. Northrup spoke of the great enjoyment derived from the beautiful flowers, and the adornment of home and its surroundings. They had received much benefit and pleasure from seeing them in the yards of others, and felt under obligation to the growers for their good influence. We should sometimes lose sight of the dollars and cents, and consider the true value of the comfort, joy and beauty of home.

Mr. G. J. Kellogg said he had been exceedingly entertained by the papers of the ladies, and only regretted that we had to go back from the poetry of horticulture to the prose.

He moved that the thanks of the society be tendered to the ladies who had contributed to our entertainment, and that their names be placed on the list of the society as honorary members, which was unanimously carried.

Mr. F. S. Lawrence, on the part of the committee appointed by

the society to draw up resolutions expressing our sympathy with bereaved members, presented the following:

WHEREAS, Providence, in His infinite mercy, has seen proper to enter, during the past year, the homes of two prominent and honored members of the society, and taken to himself their dearly beloved companions, Mrs. N. F. Lund, of Madison, and Mrs. J. C. Plumb, of Milton, ladies of unexceptionable character, well beloved in their respective, social circles, and esteemed for their many domestic virtues, and whose memories are still fragrant as the beautiful flowers which they so dearly loved, and so freely bestowed upon all; therefore,

Resolved, That the society tender to Mr. N. F. Lund and Mr. J. C. Plumb, its sympathies in this, their affliction, and commend them to One who doeth all things well, and for a purpose,

Resolved, That the Secretary cause these resolutions to be entered in full upon the records of this society, and that copies be sent to each of our afflicted brothers, as a memento of our sympathy and condolence in this, their sorrow.

Which were adopted.

Papers on the following subjects were read:

"Twenty-five Years Experience in the Orchard," by B. B. Olds of Clinton.

"Apple-Culture—The Up-hill Side," by G. J. Kellogg of Janesville.

"Orchard Protection," by H. M. Thompson, of St. Francis.

"Success or Failure in Fruit-culture," by G. W. Putnam, of Ash Ridge.

REPORT OF CRANBERRY COMMITTEE.—The committee appointed to consider the cranberry interests of the State made the following report:

Members of the State Horticultural Society:—Your committee would respectfully report that in their opinion it is advisable to appoint a committee, to consist of one member from each county, actively engaged in the cultivation of cranberries, or having land suitable for that business, said committee to report through its chairman to the secretary of your society, at the earliest possible time, giving the name of each grower, individual or company; number of acres set to vines owned by each; number of acres in bearing owned by each; the amount invested in improvements up to January 1, 1876, and such other facts as the chairman of said committee may suggest.

Also that the committee on Centennial Exhibition, be requested to secure specimens of cranberries, showing varieties, soil and growing vines, for the Centennial Exhibition.

C. S. WHITTIER,

Chairman.

Which report was adopted, and in accordance with their recommendation, the following were appointed as members of the committee:

Chairman, Dr. H. Allen, for Monroe county; Hon. J. T. Kingston, Juneau county; H. Floyd, Green Lake county; O. A. Southmayd, Columbia county; Geo. P. Pepper, Waukesha county; and the committee were authorized to appoint members for the other counties, containing cranberry lands.

CARE OF FRUIT.—Mr. Olds called up the question of the proper method of handling and storing our fruit, said that our apples were in bad repute as to keeping qualities; many would pass by home fruit and pay higher prices for Michigan and Ohio apples, because they thought ours would not keep. This is doubtless, mainly owing to the fact that our apples are roughly handled in picking and conveying to market, and from want of care in storing. Thought it would pay to build houses for the express purpose of storing.

Mr. S. S. Northrop was satisfied that we did not pick our fruit early enough. By picking a few days before it was fully ripe we should add much to the length of time it would keep.

REPORT OF COMMITTEE ON JOINT CONVENTION.—The chairman of the committee of conference with the State Agricultural Society, reported as follows:

Gentlemen of the State Horticultural Society:

The Executive Board of the Agricultural Society, desire me to inform you that they have amended their by-laws so as to meet on the Monday next preceding the first Tuesday in February, instead of as heretofore, so as to hold a joint convention with our society. That they deem it advisable to leave the details of said joint convention to the secretaries of the two societies.

With reference to the subject of a joint exhibition at the fair next fall, the Agricultural Society were willing to offer the same terms as last year, except that the unclaimed premiums should be retained by their Society. There was a strong feeling against paying them to us, but it was finally agreed that if they succeeded in getting the appropriation of \$2,000 from the State, the amount of unclaimed premiums should be paid to our treasurer, but otherwise, were to be retained by them. Your committee were induced to assent to this condition.

J. S. STICKNEY,
Chairman.

Which report was adopted, and, on motion of Mr. Stickney, article five of the constitution was amended so as to read as follows: "The society shall hold annual meetings, commencing on the Mon-

day next preceding the first Tuesday in February, for the election of officers," etc.

The following resolution, introduced by Geo. J. Kellogg, was passed without debate:

Whereas, A number of establishments for the sale of beer, cider, and other intoxicating liquors were located upon the fair-grounds during the State Fair held at Milwaukee in the fall of 1875;

Whereas, We believe it to be detrimental to the great interests of the Agricultural Society of this State, and a "reproach to any people" to foster or in any manner encourage or permit the sale of intoxicating liquors, especially so on great State occasions,

Therefore, we, the State Horticultural Society, convened at Madison, do hereby request and urge upon the managers of the State Agricultural Society to prohibit in the future the sale or giving away of any intoxicating liquors or drinks, in or upon any of the society's buildings or grounds during any fair.

Vice-President Smith said that for a number of years they had prohibited the sale of ardent spirits on the grounds of their Northern Fair, and had been much gratified with the result, not having a single case of drunkenness or disturbance of any kind.

On motion, Mr. Smith was instructed to make the wishes of the Society known to the Agricultural Board.

Mr. J. C. Plumb introduced the following resolution, in relation to extending the Signal Service:

Resolved, That this Society memorialize our senators and representatives in Congress, so to extend the scope of the Signal Service as to give the benefits of its observations and deductions to agriculture, by sending warning to every telegraphic station of the approach and probable extent and severity of such storms as may occur between April and November; and also the cold waves, their path and probable severity.

We hope, also, they will make every practicable effort to extend one circuit of observation around one entire great circle of the globe, in our general latitude, without which no philosophic observations of the weather can be considered in any degree complete.

Resolved, That the secretary of this Society be instructed to transmit a copy of the report of this committee to each of our senators and representatives in Congress.

Also, a resolution asking a reduction in postage on third-class mail matter, as follows:

Resolved, That this Society earnestly ask a return by the United States Postal Department, to the rates of postage on all third-class mail matter, which obtained before the amendment passed at the last session of Congress; and that our secretary be instructed to forward a copy of this resolution to each member of Congress from this State.

Which were passed without dissent.

Superintendent Kellogg presented his report on the horticultural exhibition at the State Fair.

On motion of J. M. Smith, the treasurer was instructed to pay the secretary the usual appropriation of one hundred dollars.

FRUIT ON EXHIBITION.—The committee appointed to examine the fruits on exhibition made the following report:

Your Committee on Examination of Fruits have inspected the fruit on exhibition and report as follows:

J. C. Plumb, of Milton, exhibits twenty-one varieties of apples. A Siberian apple (the Lake), a winter variety, good eating, mild, sub-acid. Of standard apples, Pewaukee, Fall Orange, Bethlehemite, Walbridge, Lawver, Paradise, Winter-Sweet, Blue-Pearmain, Smokehouse, Ben Davis, Winter Pennock, Smith's Cider, Minkler, Woodworth Seedling, Willow-Twig, Seek-no-further, Rawle's Janet, Hoopes, Campfield, Price's Sweet, Howard Spitzenberg, and Utter's; most of the specimens being in good condition.

Geo. P. Peffer, of Pewaukee, exhibits four varieties of standard apples: Pewaukee, Fall Orange, Jonathan, Paradise, Winter Sweet, and six varieties of seedling apples, Clark's Orange, Felix, Ellen Russet, Nellis White, Porter's Best, and Oakton. He also exhibits a specimen of the Wealthy apple; a specimen from Minnesota, and a collection of hybrid apples of much promise.

Geo. J. Kellogg, of Janesville, has six varieties of apples: Willow-Twig, Ben Davis, Fameuse, Barrett Russet, Pomme Grise, and Perry Russet.

B. B. Olds, of Clinton, exhibits fifteen varieties: Ben Davis, Rawle's Janet, Perry Russet, Victuals-and-Drink, Domine, Jonathan, Fameuse, Golden Russet, Red Sweet Pippin, Hurlburt, Monmouth Pippin, Wagner, Red Romanite, and Red Winter Sweet. He also has a specimen of Willow Twig of the season of 1874, in fair condition.

G. W. Putnam, of Ash Ridge, has two varieties of standard apples, the Utter, and Plumb's Cider; also ten varieties of Siberians, Hyslop, Soulard, Marengo No. 1, and No. 2, Lake Crab; five varieties seedlings, Nos. 1, 5, 9, 12, and 19.

A. G. Tuttle, of Baraboo, exhibits ten varieties: Fameuse, Fall Spitzenburg, Walbridge, Drap de Or, Plumb's Cider, Bailey Sweet, Alexander, Utter, Twenty-Ounce, also a very late winter apple, from Russian stock, Red Rannett.

A. J. Phillips exhibits samples of an apple said to be a seedling, and to keep till April. It is of good size and a fine appearance.

Charles Hirschinger, of Baraboo, has six varieties of apples: Golden Russet, Tolman Sweet, Weaver Sweet, Utter, Seek-no-further, and Northern Spy. Also, he exhibits fine specimens of the Hyslop Crab.

A. N. SEYMOUR,
GEO. V. OTT,
N. F. LUND,

Committee.

The secretary was instructed to ask the return from Mr. George Jeffery of Five-Mile House, of one of the premiums awarded to him on plums, by mistake.

Vice-President Smith and George P. Peffer were appointed delegates to represent the society at the agricultural convention.

Society adjourned till 7 o'clock p. m.

THURSDAY EVENING, 7 O'CLOCK.

The Vice-President called the society to order, and on motion appointed Messrs. Kellogg and Stickney to draw resolution in relation to decease of D. M. Morrow, a member of the society.

RECOMMENDATION OF FRUIT-LISTS.—The question of recommending lists of fruit for general cultivation, was taken up.

Mr. Lawrence said he had always been opposed to the society recommending any list of varieties; it is impossible to get a list that is adapted to all localities; some kinds will do well on a given kind of soil and exposure, but if these conditions are changed, they are not to be relied upon. To be safe in recommending lists, we should describe the conditions to which they are adapted. It would require at least three different lists for Janesville. The most we can do is to give a list of varieties best adapted, and let the people judge for themselves what is best for their locality.

A motion was made by Mr. Hatch that we do not recommend any list of fruits. Seconded by Mr. Lawrence.

Mr. Kellogg thought we should recommend certain varieties; unless we did, farmers would plant other tenderer varieties and suffer greater loss, but that there should be different lists for the different soils and locations. He did not favor any list for general planting.

Gen. Lund felt that we could not safely recommend a list of apples; thought much injury had been done in doing so. Even our hardiest varieties will not do well in all locations, and unless we can define the conditions of soil, exposure, etc., essential to the success of such varieties, we shall do harm by recommending them. He would not venture to recommend any variety of grapes, unless he knew the conditions under which they were to be set.

President Tuttle thought the society had done much hurt by thus recommending varieties for general cultivation. There are places where it would be useless to try any, even of our hardiest varieties of apples, and there are others, where varieties regarded as tender will do well. In the same neighborhood, and often on the same farm, we find poor and good sites for an orchard. When asked by the purchaser what to plant, he could, after learning the soil, exposure, and other conditions, tell, with tolerable certainty, what would be most likely to succeed; without these are definitely known, it is impossible, safely, to recommend. He thought it would be much better for those who wanted to set out orchards to go by the experience of those near them, who are similarly situated.

Mr. Kellogg introduced the following resolution:

Resolved, That we recommend those varieties of fruits in each locality that are succeeding in such locations.

Mr. Cheek said we cannot recommend varieties safely for general cultivation, for what will do well with one, often fails with others. He could not recommend the cultivation of pears, notwithstanding they succeed with him. He had raised sixteen different kinds of pears for years, and had not lost a crop or suffered from the blight, but this was not proof that others would succeed.

The above resolution was adopted.

Mr. Whittier moved that the secretary be instructed to confer with the committee on cranberries in regard to getting up a circular and in distributing the same. Carried.

JUNE MEETING.—The committee to whom was referred the invitation of the Lemonweir Horticultural Society, presented the following resolution:

Resolved, That we accept the invitation of the Lemonweir Valley Horticultural Society and meet with them in June next, at such day and place as they may designate, and will, at such meeting assist them in making an exhibition of strawberries, roses, and other flowers.

Which was adopted, and, on motion of General Lund, the officers of the society were authorized to make the necessary arrangements for said June meeting.

STRAWBERRIES.—In answer to an inquiry as to the removal of strawberry-plants into pots, for exhibition purposes, Mr. Peffer said he had carefully taken them up when the ground was frozen, and placed in pots in hot-beds to secure early fruit.

Mr. Stickney had seen as fine an exhibition as could be wished for, of all the leading varieties of strawberries in eight-inch pots, and he thought we might greatly add to the interest of our June meetings by this method of cultivation.

Mr. Lawrence had tried all the leading varieties of strawberries, and regarded the Charles Downing and Boyden's No. 30, as much the best; far superior in flavor, and with him not inferior in productiveness.

Mr. Cheek fully endorsed this opinion as to value of the varieties. From one-tenth of an acre he marketed forty-eight bushels of berries, the lowest price received was fifteen cents a quart for the Wilson; the highest, twenty-five cents for the Charles Downing. He found no difficulty in finding customers who were willing to pay higher prices for berries of better quality than the Wilson. When customers want the best flavored berries, he recommended Charles Downing, Wilder and Peaks' Emperor; if they wanted a cheap berry he sold them the Wilson.

Mr. B. F. Adams was very much pleased with the Charles Downing and Boyden's No. 30, but for profit, give him the Wilson; the yield was much larger and the berries much better for shipping. On eighty-four rods of ground he had raised the past season one hundred and forty-eight bushels of Wilson. Thought it was well to have other varieties to prolong the season, but for the main crop he would choose the Wilson every time. Strawberry season with him, this year, lasted forty-five days.

Mr. Kellogg said he could not sit still and see an old friend abused. Give him the Wilson first, last, and all the time; there was no berry like it for profit.

Mr. Smith had sold the past season, from quarter of an acre, 3,572 quarts, or 111½ bushels of berries, at an average price of thirteen cents a quart; amount received \$464.36 at the rate \$1,857.44 per acre. He raised the Wilson for profit; he had raised many other varieties and tried many experiments; had had fair crops of some of the other kinds, but never made a dollar except on the Wilson. Thinks that irrigation added largely to the yield of his berries this season. Has put up a wind-mill, and keeps the beds well supplied with water during the fruiting season.

Mr. Hatch had failed in his attempts to crowd the plants; high culture may give large crops on some ground, but with him it was

not successful. The poor sandy soil around Boscobel yielded berries of extra quality, and without extra cultivation.

Mr. Lawrence said it took no more care or attention, or no better soil to raise good crops of Charles Downing, Boyden's No. 30, and Nicanor with him, than of any of the other varieties.

Mr. Cheek was at first prejudiced in favor of the Wilson. He had tested the leading varieties; taking two hundred plants of each, he raised them side by side for three years. He got more berries from the Charles Downing than from the Wilson, and the season was three days longer, but the Kentucky exceeded them both. Usually there were only four decent pickings of the Wilson, the rest were small, imperfect berries, while the others held up in size to end of season.

EVERGREENS.—The consideration of the list of evergreens being taken up, Mr. Lawrence remarked that the Austrian Pine was easy to transplant and of good appearance, and hence worthy of general cultivation, as much so as the Norway Spruce.

Mr. Stickney thought it well adapted for protection and ornamental purposes, but for timber, preferred Norway Spruce.

Mr. Howie inquired if any one had had experience with the Norway Pine. With him it was a handsome tree and very desirable for ornament. He regarded it as worthy a place in the list.

Mr. Stickney, while admitting that it was a very handsome tree, said there was one serious objection to it; he had found by experience that it was hard to handle; did not transplant easily, and he learned that others had found the same trouble with it.

Mr. Thompson, in addition to this, had found it very difficult to procure seeds of this variety, which made it too costly to cultivate for general purposes.

Mr. Plumb had great difficulty in making them live; nearly all the trees sold died; out of one thousand young trees he bought, only one hundred lived.

Mr. Howie had not experienced the same difficulty; it had done well, living and growing with him, as readily as other varieties. Had pulled them up in May, in the woods, when small, and set them out with but little loss.

The motion to add it to the list for ornamental purposes was carried.

In reply to an inquiry by Mr. Lawrence, as to his experience with

the Dwarf, Mountain Pine, Mr. Thompson stated that he found it very easy to cultivate, hardy and strictly a dwarf; a bush rather than a tree, and beautiful for small yards. There are two varieties, *Pinus pumilio*, and *Pinus Montana*. The last named is much the most desirable.

Mr. Lawrence said it was a very handsome bush, and he would highly recommend it, and moved that the *Pinus Montana* be added to the list for ornamental cultivation. Carried.

Mr. Phillips was convinced that we had failed to set out trees as we ought. Was not aware how much might be done, how soon they grew up, until he visited Mr. Whitney's place recently. There, on going a short distance from the house, he came into a grove of large trees, a foot and a half and two feet through, so large that they resembled the native woods except in variety. Here were large trees of all kinds of evergreens and Lombardy Poplar grown up within twenty years. One row of the latter kind, a little over one hundred rods long, set nineteen years ago, had just been cut down and yielded one hundred cords of wood. Another of the same length, set between rows of evergreens, measured up, when cut, eighty cords. He thought we would do well to profit by this example.

Mr. Thompson said that evergreens, where used for ornamental purposes, were generally set too thick, and had either to be trimmed up, which injured their appearance, or to be thinned out, while the shape of those left had been spoiled by crowded growth. The better way, and one which is gaining in favor, is to set them in clumps, where the grounds are large and a good effect is sought.

The following resolution, introduced by Mr. Kellogg, was passed:

Resolved, That in the death of D. M. Morrow, our Society has lost an efficient co-worker in the horticultural department, and that we tender to the bereaved our hearty sympathy, and that this resolution be placed on our records, and a copy be sent to the friends of the deceased.

FRUIT-DISTRICTS.—On motion the following were appointed as the committee of observation for the ensuing year:

FIRST DISTRICT.—H. M. Thompson, of St. Francis.

SECOND DISTRICT.—J. C. Plumb, of Milton, with power to divide the district and to appoint assistant.

THIRD DISTRICT.—E. H. Benton, of Le Roy.

FOURTH DISTRICT.—A. L. Hatch, of Ithaca.

FIFTH DISTRICT.—E. W. Daniels, of Auroraville.

SIXTH DISTRICT.—M. L. Clark, of New Lisbon.

SEVENTH DISTRICT.—D. Huntley, of Appleton.

EIGHTH DISTRICT.—A. W. Felch, of Amherst.

NINTH DISTRICT.—A. J. Phillips, of West Salem.

TENTH DISTRICT.—G. W. Perry, Superior.

ELEVENTH DISTRICT.—Saml. Rounseville, of Sheboygan Falls.

TWELFTH DISTRICT.—J. M. Smith, of Green Bay.

The thanks of the society were voted to the railroad companies for their kindness in granting the members reduced fare.

An extension of time was granted to the committee on revision of the premium list to perfect their labor.

NOMENCLATURE.—Mr. Plumb, chairman of the committee on nomenclature, in making a verbal report, stated that he had found further confirmation of the identity of the Walbridge with the Edgar County Red-Streak. That the account of Mr. Curtis was correct, except that the trees sent to Wisconsin, were set in Rock county, instead of near Watertown. Mr. Curtis had brought cions and fruit to Chicago and on comparing them with the Walbridge, the two were found to be identical. The question arises, having grown it and given it its present name, shall we give it up and go back to the one said to have been given in Indiana? This ought to be settled now, and made a matter of record.

In reply, Mr. Tuttle thought we had better be sure that this account was correct before we made any change. He had received cions of the Red-Streak and set them a year ago, and would be able soon, probably next year, to judge as to their identity. The characteristics of a variety are not always marked in the first years' growth. He did not care by what name it was called, that would not affect its quality, but he wanted to be sure before taking any action. The charge made against this society of giving new names to old varieties had been declared to be without foundation by those well able to judge; in proof of which he mentioned the Utter and Plumb's Cider.

As we had been the first to give publicity to the name, describe the fruit, and place it upon the record, Mr. Peffer thought we were entitled to the name we had given it.

Mr. Plumb was quite sure the two were identical, but thought we were entitled to the name and had better keep it. He had traced

the Utter and Wine-Sap to the same source, the Curtis Nursery of 1820.

Society adjourned till 9 o'clock of the fourth.

FRIDAY, 9 A. M.

Society met and considered the subject of Centennial Exhibition, in executive session.

The chairman of the committee on illustration of the transactions, stated what had been suggested by the committee, and the subject was taken up, and it was decided that in view of the great benefits which would result to the interests of horticulture in this State, if the public generally were better informed in respect to their insect friends and foes, the society would give a series of articles in its annual reports, describing and illustrating with cuts, the insects beneficial and injurious to horticulture.

They also decided that the pages of our reports should be open to copy for illustrations from our members of any objects that may seem to the executive committee in accordance with the purpose for which the fund was given.

The society adjourned *sine die*.

PREMIUMS AWARDED

IN THE

FRUIT AND FLOWER DEPARTMENT

AT
THE WISCONSIN STATE FAIR,

Held at Milwaukee, September 6-11, 1875.

Fruits by professional cultivators.

APPLES.

Best and greatest display of varieties not to exceed 50, A. G. Tuttle, Baraboo.	\$10 00
Second best, Gould's Nursery Company, Beaver Dam.	7 50
Third best, Geo. J. Kellogg, Janesville.	5 00
Best 10 varieties adapted to the northwest, E. Wilcox.	10 00
Second best, A. G. Tuttle, Baraboo.	7 50
Third best, Geo. J. Kellogg, Janesville.	5 00
Best 5 varieties adapted to the northwest, Geo. J. Kellogg, Janesville.	5 00
Second best, Geo. P. Peffer, Pewaukee.	3 00
Third best, Wm. Finlayson, Mazomanie.	2 00
Best and largest variety winter, not to exceed 20, Geo. P. Peffer, Pewaukee.	5 00
Second best, Geo. J. Kellogg, Janesville.	3 00
Third best, Gould's Nursery Company, Beaver Dam.	2 00
Best 5 varieties winter, A. G. Tuttle, Baraboo.	5 00
Second best, Geo. J. Kellogg, Janesville.	3 00
Third best, Wm. Finlayson, Mazomanie.	2 00
Best show of ten varieties, without regard to adaptation, Gould's Nursery Company, Beaver Dam.	5 00
Second best, Geo. P. Peffer, Pewaukee.	3 00
Third best, Geo. J. Kellogg, Janesville.	2 00
Best plate of three specimens each; Red Astrachan, A. G. Tuttle, Baraboo.	1 00
Duchess of Oldenburg, Gould's Nursery Company, Beaver Dam.	1 00
St. Lawrence, A. G. Tuttle, Baraboo.	1 00
Fameuse, Geo. Wolff, Dansville.	1 00
Utter's, Stickney, Baumbach & Gilbert, Waupun.	1 00
Plumb's Cider, Stickney, Baumbach & Gilbert, Waupun.	1 00
Seek-no-Further, Geo. P. Peffer, Pewaukee.	1 00
Willow-Twig, Geo. P. Peffer, Pewaukee.	1 00
Ben Davis, Gould's Nursery Company, Beaver Dam.	1 00
Tolman Sweet, Wm. Finlayson, Mazomanie.	1 00
Golden Russet, Geo. Wolff, Dansville.	1 00
Largest apple, A. G. Tuttle, Baraboo.	1 00
Heaviest apple, Geo. P. Peffer, Pewaukee.	1 00

PEARS.

Best and greatest display of varieties, Geo. P. Peffer, Pewaukee.....	\$5 00
Second best, Geo. Wolff, Dansville	4 00
Third best, Gould's Nursery Company, Beaver Dam.....	2 00
Best five varieties, Geo. Wolff, Dansville.....	3 00
Second best, Geo. P. Peffer, Pewaukee.....	2 00
Best 3 varieties, Wm. Kitzrow, Milwaukee.....	3 00
Second best, Gould's Nursery Company, Beaver Dam.....	2 00
Best Flemish Beauty, A. G. Tuttle, Baraboo.....	3 00
Second best, Geo. P. Peffer, Pewaukee.	2 00

PLUMS.

Best and greatest variety, George Jeffery, Five-Mile House.....	5 00
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The committee on apples on professional list, in submitting their report, would say, that in making their awards on best ten, adapted to the northwest, they were governed by the following rules: Hardiness, productiveness, quality, and varieties for season, adopting the following list as a basis to work to: Red Astrachan, Duchess of Oldenburg, Haas, Utters, Plumb's Cider, Fameuse, Tolman Sweet, Walbridge, Golden Russet, and Willow Twig. On best five, adapted, upon the same rules; Red Astrachan, Duchess of Oldenburg, Fameuse, Tolman Sweet, and Golden Russet.

On the best five winter, it was found exceedingly difficult to determine the awards, as there were four or five different collections worthy of much merit. The exhibitors found it very difficult to arrange their fruit for proper display, for lack of room; the exhibits being so much greater than was anticipated.

F. C. CURTIS,
N. N. PALMER,
H. H. HOWLETT,
Committee.

Grapes and crabs by professional cultivators.

GRAPES.

Best and greatest display of varieties, Gould's Nursery Company, Beaver Dam.....	\$10 00
Second best, C. H. Greenman, Milton.....	7 50
Third best, Geo. J. Kellogg, Janesville.....	5 00
Best 10 varieties, Geo. J. Kellogg, Janesville.. ..	7 50
Second best, C. H. Greenman, Milton.....	5 00
Third best, Geo. P. Peffer, Pewaukee.....	3 00
Best 5 varieties, Geo. J. Kellogg, Janesville	5 00
Second best, C. H. Greenman, Milton.....	3 00
Third best, Geo. P. Peffer, Pewaukee.....	2 00
Best 3 varieties, C. H. Greenman, Milton.....	3 00
Second best, Geo. J. Kellogg, Janesville.....	2 00
Third best, Gould's Nursery Company, Beaver Dam.....	1 00
Best 2 varieties, Geo. J. Kellogg, Janesville.....	2 00
Second best, C. H. Greenman, Milton.....	1 00
Best single variety, Geo. J. Kellogg, Janesville.....	3 00
Second best, C. H. Greenman, Milton.....	2 00
Best 3 bunches Concord on one cane, Geo. J. Kellogg, Janesville.....	2 00
Second best, C. H. Greenman, Milton.....	1 00
Best 3 bunches Delaware, on one cane, Geo. J. Kellogg, Janesville.....	2 00
Second best, C. H. Greenman, Milton.....	1 00
Best single variety, quality to rule, Geo. J. Kellogg, Janesville.....	3 00
Second best, C. H. Greenman, Milton.....	2 00

CRABS.

Best and greatest variety named, Wm. Finlayson, Mazomanie	\$3 00
Second best, E. Wilcox, Trempealeau	2 00
Third best, A. G. Tuttle, Baraboo	1 00
Best plate Hyslop, Geo. J. Kellogg, Janesville	1 00
Best plate Transcendent, A. G. Tuttle, Baraboo	1 00
Best seedling crabs, Geo. P. Peffer, Pewaukee	2 00
Second best Gould's Nursery Company Beaver Dam	1 00

J. M. SMITH,
J. W. ARNDT,
H. H. GREENMAN,
Committee.

SWEEPSTAKES ON FRUITS OF ALL KINDS.

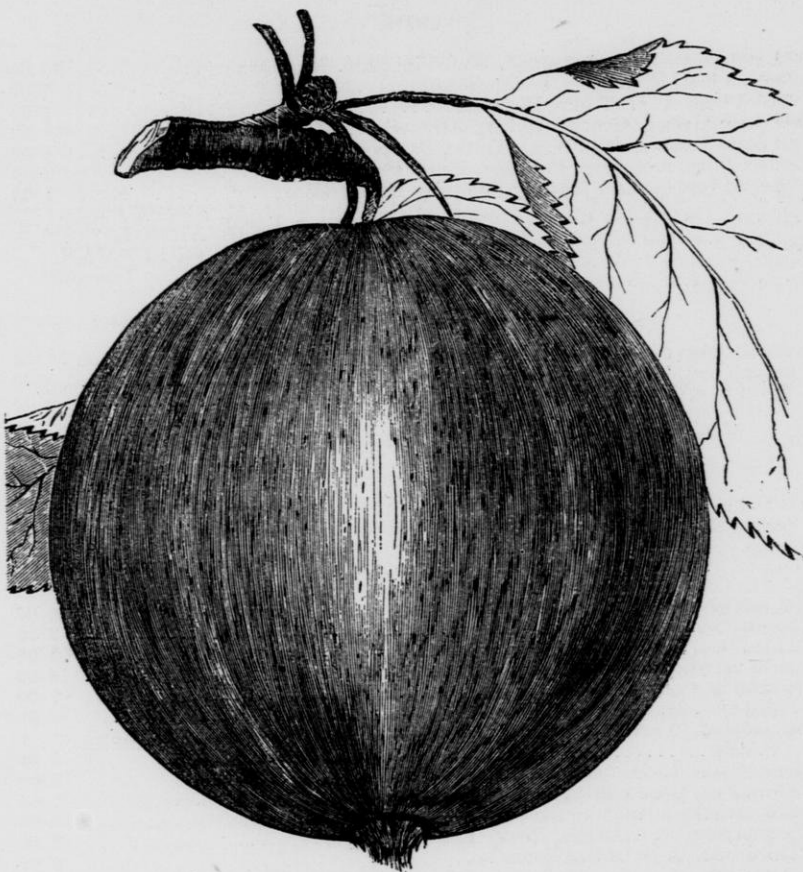
Best collection of fruits of all kinds, Gould's Nursery Company, Beaver Dam	\$7 50
Second best, Geo. J. Kellogg, Janesville	5 00
Third best, Geo. P. Peffer, Pewaukee	3 00

B. F. FELCH,
H. W. ROBY,
C. H. GREENMAN,
Committee.

Fruits by non-professional cultivators.

APPLES.

Best and greatest display of varieties not to exceed 50, B. B. Olds, Clinton..	\$10 00
Second best, James Ozanne, Somers	7 50
Third best, Geo. W. Ringrose, Wauwatosa	5 00
Best 10 varieties adapted to the northwest, Geo. Jeffery, Five-Mile House...	10 00
Second best, A. A. Boyce, Lodi	7 50
Third best, M. Robinson, Wauwatosa	5 00
Best show of 10 varieties, without regard to adaptation, Wm. Reid, North Prairie	5 00
Second best, C. H. Jacobs, Wauwatosa	3 00
Third best, Geo. Jeffery, Five-Mile House	2 00
Best 5 varieties adapted to the northwest, A. Wheeler, Pewaukee	5 00
Second best, F. C. Curtis, Rocky Run	3 00
Third best, B. B. Olds, Clinton	2 00
Best and largest winter, not to exceed 20, Geo. Jeffery, Five-Mile House...	5 00
Second best, James Ozanne, Somers	3 00
Third best, B. B. Olds, Clinton	2 00
Best 5 varieties winter, B. B. Olds, Clinton	5 00
Second best, Geo. Jeffery, Five Mile-House	3 00
Third best, F. C. Curtis, Rocky Run	2 00
Best plate of Red Astrachan, Luther Rawson, Oak Creek	1 00
Duchess of Oldenburg, Geo. Jeffery, Five-Mile House	1 00
Fameuse, C. H. Jacobs, Wauwatosa	1 00
St. Lawrence, B. B. Olds, Clinton	1 00
Utter's, F. C. Curtis, Rocky Run	1 00
Plumb's Cider, A. A. Boyce, Lodi	1 00
Seek-no-Further, F. C. Curtis, Rocky Run	1 00
Tolman Sweet, Wm. Reid, North Prairie	1 00
Golden Russet, Wm. Reid, North Prairie	1 00
Willow-Twig, F. C. Curtis, Rocky Run	1 00
Ben Davis, Wm. Reid, North Prairie	1 00
Largest Apple, Geo. Jeffery, Five-Mile House	1 00
Heaviest Apple, Geo. Jeffery, Five-Mile House	1 00



CLARK'S ORANGE.

DESCRIPTION.—The original tree stands in the village of Pewaukee; it is over thirty years old and is very thrifty. It is a seedling of the Duchess, fertilized by the Belmont. Every other year it bears very heavy crops and a light one the alternate seasons; is a fair grower, with rather close, pyramidal top; shoots, light brown; leaves, grayish green. Fruit, medium to large; nearly round like an orange; calyx and basin very shallow, regular, nearly without rib or wrinkle; skin, yellow, covered partially with vermilion and carmine stripes, very smooth and of a fine color; dots, small and few; flesh, white, juicy, subacid, quite mild; good for dessert and cooking; keeps well into mid-winter; stem, long; fruit hangs well on the tree; seeds, rather large, dark brown; core, medium.

The fruit and cions of this tree were exhibited five successive years at the State Fair, and receiving the first premium at each, it was declared entitled to the highest award of the Society on seedlings.

PEARS.

Best and largest display of varieties, James Ozanne, Somers	\$5 00
Second best, Geo. Jeffery, Five-Mile house.....	4 00
Best 5 varieties, James Ozanne, Somers	3 00
Best 3 varieties, James Ozanne, Somers	3 00

PLUMS.

Best and greatest variety, Geo. Jeffery, Five-Mile House..... 5 00
 In the exhibition of fruits by amateurs we find a very large and fine display of apples, much better than anticipated on account of the late season. Exhibitors are entitled to much credit for their efforts in this department. J. M. Smith, Esq., of Green Bay, exhibited six varieties of excellent pears grown by him.

G. PERRY,
 A. G. TUTTLE,
 J. N. SAVAGE,
 WM. FINLAYSON,
Committee.

Grapes and crabs by non-professional cultivators.

GRAPES.

Best and greatest display of varieties, Wm. Reid, North Prairie.....	\$10 00
Second best, N. N. Palmer, Brodhead	7 50
Best ten varieties, Wm. Reid, North Prairie.....	7 50
Second best N. N. Palmer, Brodhead	5 00
Best five varieties, Wm. Reid, North Prairie	5 00
Second best, N. N. Palmer, Brodhead	3 00
Best three varieties, Wm. Reid, North Prairie.....	3 00
Second best, N. N. Palmer, Brodhead	2 00
Best two varieties, Wm. Reid, North Prairie	2 00
Second best, N. N. Palmer, Brodhead	1 00
Best single variety, Wm. Reid, North Prairie.....	3 00
Second best, N. N. Palmer, Brodhead	2 00
Best three bunches Concord on one cane, Wm. Reid, North Prairie.....	2 00
Second best, G. W. Ringrose, Wauwatosa.....	1 00
Best three branches Delaware on one cane, Wm. Reid, North Prairie.....	2 00
Second best, G. W. Ringrose, Wauwatosa.....	1 00
Best single variety, quality to rule, Wm. Reid, North Prairie.....	3 00
Second best, N. N. Palmer, Brodhead	2 00
Best show Foreign, Mrs. Alex. Mitchell, Milwaukee.....	3 00

CRABS.

Best and greatest varieties named, Wm. Reid, North Prairie.....	3 00
Second best, Geo. Jeffery, Five-Mile House.....	2 00
Third best, N. N. Palmer, Brodhead.....	1 00
Best plate Hyslop, Geo. W. Ringrose, Wauwatosa.....	1 00
Best plate Transcendent, Geo. W. Ringrose, Wauwatosa.....	1 00
Best seedling crabs, Wm. Reid, North Prairie.....	2 00

C. M. HAMBRIGHT,
 H. H. HOWLETT,
 W. D. HAMBRIGHT,
Committee.

SWEEPSTAKES ON FRUITS OF ALL KINDS.

Best collection fruit, of all kinds, Wm. Reid, North Prairie.....	\$7 50
Second best, Geo. Jeffery, Five-Mile House	5 00
Third best, James Ozanne, Somers.....	3 00

H. H. GREENMAN,
 DOUGLAS SYKES,
 W. D. HAMBRIGHT,
Committee.

Nursery-trees.

- Best collection of deciduous, nursery-grown trees, quality to rule, Gould's Nursery Company, Beaver Dam Diploma.
 Best collection of fruit-trees, Gould's Nursery Company, Beaver Dam.... Diploma.
 Best collection of hardy flowering shrubs, Gould's Nursery Company, Beaver Dam..... Diploma.

A small lot of very nice apple-trees, three years old, were exhibited by J. N. Savage, of Baraboo; also specimens of apple-trees double-worked upon crab roots, by E. Wilcox, of Trempealeau.

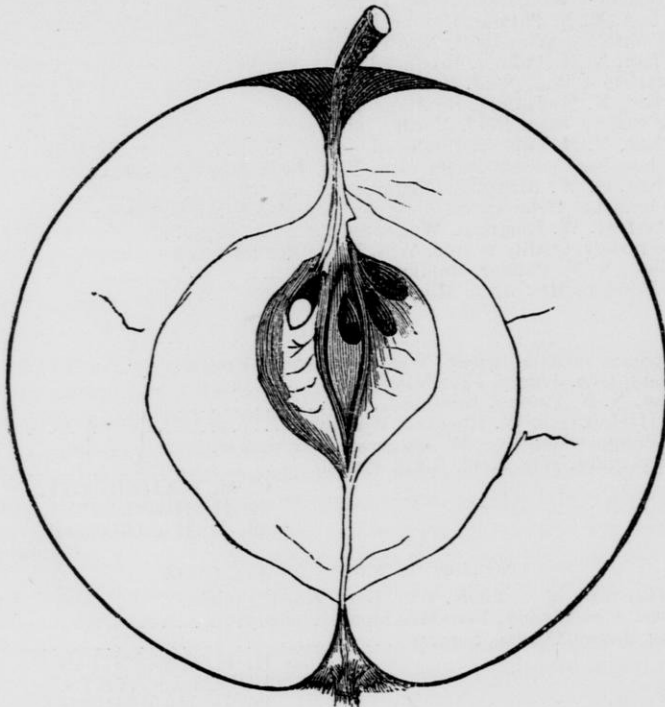
We would respectfully suggest that the "nursery stock" in this class be made of more importance by giving larger premiums.

One of the first and most important points in fruit-growing, is to obtain good trees, rightly named, judiciously pruned, with ample roots, etc. The exhibition by the Gould Nursery Company was an extra fine show of fruit, ornamental trees, and shrubbery, showing care in growing and skill in handling.

A. C. TUTTLE,
 WM. FINLAYSON,
 J. A. PEFFER,
Committee.

Seedlings.

- Best seedling exhibited five years in succession, and receiving the first premium each year, Geo. P. Peffer, Pewaukee, "Clark's Orange," first premium for 1871. \$10 00



CLARK'S ORANGE—OUTLINE.

Flowers by professional cultivators.

Best and most artistically arranged floral design, Wm. Kitzrow, Milwaukee..	\$7 50
Best and most tastefully arranged collection of cut flowers, Wm. Kitzrow, Milwaukee.....	4 00
Second best, Kate Pepper, Pewaukee.....	3 00
Third best, H. G. Roberts, Janesville.....	2 00
Best and most tastefully arranged basket of flowers, Wm. Kitzrow, Milwaukee.....	3 00
Best pyramidal bouquet, Wm. Kitzrow, Milwaukee.....	3 00
Second best, Kate Pepper, Pewaukee.....	2 00
Best pair round bouquets, Wm. Kitzrow, Milwaukee.....	3 00
Best pair flat bouquets, Wm. Kitzrow, Milwaukee.....	2 00
Second best, Kate Pepper, Pewaukee.....	1 00
Best bouquet everlasting flowers, Wm. Kitzrow, Milwaukee.....	3 00
Best display dahlias, not more than 20 varieties, Wm. Kitzrow, Milwaukee..	3 00
Second best, Kate Pepper, Pewaukee.....	2 00
Best 10 named dahlias, Kate Pepper, Pewaukee.....	2 00
Second best, Wm. Finlayson, Mazomanie.....	1 00
Best display roses, Wm. Kitzrow Milwaukee.....	4 00
Best 5 named varieties roses, Wm. Kitzrow, Milwaukee.....	3 00
Best display verbenas, Wm. Kitzrow, Milwaukee.....	3 00
Second best, Kate Pepper, Pewaukee.....	2 00
Best 10 varieties of verbenas, Kate Pepper, Pewaukee.....	2 00
Second best, Wm. Kitzrow, Milwaukee.....	1 00
Best show seedling verbenas, Kate Pepper, Pewaukee.....	2 00
Second best, Wm. Kitzrow, Milwaukee.....	1 00
Best show asters, in quality and variety, Kate Pepper, Pewaukee.....	2 00
Second best, Wm. Kitzrow, Milwaukee.....	1 00
Best show perennial phlox, Kate Pepper, Pewaukee.....	1 00
Second best Wm. Kitzrow, Milwaukee.....	50
Best show pansies, Kate Pepper, Pewaukee.....	1 00
Second best, Wm. Kitzrow, Milwaukee.....	50
Best show petunias, Kate Pepper, Pewaukee.....	1 00
Second best, Wm. Kitzrow, Milwaukee.....	50
Best show dianthus (pink), Kate Pepper, Pewaukee.....	1 00
Best show gladiolas, Wm. Kitzrow, Milwaukee.....	1 00
Second best, H. G. Roberts, Janesville.....	50
Best show phlox drummondii, Wm. Kitzrow, Milwaukee.....	1 00
Second best, Kate Pepper, Pewaukee.....	50
Best show stocks, Kate Pepper, Pewaukee.....	1 00
Second best, Wm. Kitzrow, Milwaukee.....	50
Best show balsams, Wm. Kitzrow, Milwaukee.....	1 00
Best show green-house plants, not more than 100 varieties, Wm. Kitzrow, Milwaukee.....	7 50
Best 20 varieties green-house plants in bloom, Wm. Kitzrow, Milwaukee.....	5 00
Best 10 geraniums, Wm. Kitzrow, Milwaukee.....	3 00
Best 6 fuchsias, Wm. Kitzrow, Milwaukee.....	2 00
Best 6 carnations, Wm. Kitzrow, Milwaukee.....	2 00
Best display of flowers, of all kinds, raised by exhibitor, Wm. Kitzrow, Milwaukee.....	7 50
Second best, Kate Pepper, Pewaukee.....	5 00
Best display of ornamental foliage plants, not more than 15 varieties, Wm. Kitzrow, Milwaukee.....	3 00

MRS. A. A. BOYCE,
MRS. D. H. JOHNSON,
MRS. T. J. GILMAN,
Committee.

Flowers by non-professional cultivators.

Best and most artistically arranged floral design, Mrs. E. R. Copeland, Monroe.....	\$7 50
Best and most tastefully arranged collection of cut flowers, Emily T. Smith, Green Bay.....	4 00
Second best, Mrs. H. Karzke, Milwaukee.....	3 00
Third best, Mrs. E. R. Copeland, Monroe.....	2 00

Best and most tastefully arranged basket of flowers, Mrs. H. Karzke, Milwaukee	\$3 00
Second best, Emily T. Smith, Green Bay	2 00
Best pyramidal bouquet, Mrs. H. Karzke, Milwaukee	3 00
Best pair round bouquets, Mrs. H. Karzke, Milwaukee	3 00
Best pair flat bouquets, Mrs. H. Karzke, Milwaukee	2 00
Best bouquet of everlasting flowers, Mrs. H. Karzke, Milwaukee	3 00
Second best, Emily T. Smith, Green Bay	2 00
Best display dahlias, not more than twenty varieties, Mrs. A. A. Boyce, Lodi	3 00
Second best, Mrs. H. Karzke, Milwaukee	2 00
Best ten named dahlias, Mrs. H. Karzke, Milwaukee	2 00
Second best, Mrs. A. A. Boyce, Lodi	1 00
Best display roses, Mrs. H. Karzke, Milwaukee	4 00
Best five named varieties roses, Mrs. H. Karzke, Milwaukee	3 00
Best display verbenas, Mrs. H. Karzke, Milwaukee	3 00
Second best, Mrs. E. R. Copeland, Monroe	2 00
Best ten named verbenas, Mrs. H. Karzke, Milwaukee	2 00
Best show seedling verbenas, Mrs. H. Karzke, Milwaukee	2 00
Second best, Mrs. C. C. Kingsley	1 00
Best show asters, in quality and variety, Mrs. H. Karzke, Milwaukee	2 00
Second best, Emily T. Smith, Green Bay	1 00
Best show perennial phlox, Mrs. H. Karzke, Milwaukee	1 00
Best show pansies, Mrs. H. Karzke, Milwaukee	1 00
Second best, Mrs. C. C. Kingsley	50
Best show of petunias, Mrs. H. Karzke, Milwaukee	1 00
Second best, Mrs. E. R. Copeland, Monroe	50
Best show dianthus (pink), Mrs. Karzke, Milwaukee	1 00
Second best, Emily T. Smith, Green Bay	50
Best show gladiolas, Emily T. Smith, Green Bay	1 00
Best show phlox drummondii, Mrs. H. Karzke, Milwaukee	1 00
Second best, Mrs. C. C. Kingsley	50
Best show stocks, Mrs. H. Karzke, Milwaukee	1 00
Second best, Emily T. Smith, Green Bay	50
Best show balsams, Mrs. H. Karzke, Milwaukee	1 00
Best show green-house plants, Mrs. H. Karzke, Milwaukee	7 50
Best 20 varieties green-house plants in bloom, Mrs. H. Karzke, Milwaukee	5 00
Second best, Mrs. C. C. Kingsley, Milwaukee	4 00
Best 10 geraniums, Mrs. H. Karzke, Milwaukee	3 00
Second best, Mrs. C. C. Kingsley, Milwaukee	2 00
Best 6 fuchsias, Mrs. H. Karzke, Milwaukee	2 00
Second best, Mrs. C. C. Kingsley, Milwaukee	1 00
Best 6 carnations, Mrs. H. Karzke, Milwaukee	2 00
Best display of flowers raised by exhibitor, Mrs. H. Karzke, Milwaukee	7 50
Second best, Emily T. Smith, Green Bay	5 00
Best show ornamental foliage plants, Mrs. S. S. Merrill, Milwaukee	3 00
Second best, Mrs. H. Karzke, Milwaukee	2 00

VICK'S SPECIAL PREMIUM.

Best collection cut-flowers from seeds grown or imported by him, Mrs. H. Karzke, Milwaukee	20 00
Second best, Emily T. Smith, Green Bay	10 00
Third best, Mrs. E. R. Copeland, Monroe	5 00
Fourth best, Gertie Kellogg, Janesville	Floral Chromo.

Flowers by professional non-commercial cultivators.

Floral design, Mrs. Alex. Mitchell, Milwaukee	\$7 50
Cut-flowers, Mrs. Alex. Mitchell, Milwaukee	5 00
Best show green-house plants, Mrs. Alex. Mitchell, Milwaukee	7 50
Twenty varieties green house plants, Mrs. Alex. Mitchell, Milwaukee	7 50
Best 10 geraniums, Mrs. Alex. Mitchell, Milwaukee	5 00

BUD. A. KOSS,
KATE PEFFER,
H. G. ROBERTS,

Committee.

REPORTS OF COMMITTEES.

HORTICULTURAL DEPARTMENT AT THE STATE FAIR.

GEO. J. KELLOGG, SUPERINTENDENT.

The unusual severity of the months of January and February, 1875, the coldest two months on record, the unfavorableness of the spring, the cold and wet summer, with hard frosts the 22d and 23d of August, throughout the State, almost destroying the grape-crop, and the State Fair coming the same week of the American Pomological Society Exhibition at Chicago, at which the Wisconsin State Horticultural Society had made arrangements for an exhibition, were combined causes, together with the fact that the State Fair was three weeks earlier than usual, in making the prospect for the horticultural department of the Wisconsin State Fair gloomy indeed.

After consulting with the officers of the Horticultural Society, and the Secretary of the State Agricultural Society, it was deemed advisable to issue a circular, urging all interested to assist by making a special effort to make a commendable show. This circular was mailed to all former exhibitors and many others. The time of the fair arrived, the hall was put in order, two crates of crockery ordered, the tables were provided with clean, white paper, and exhibitors began to spread out. Soon it became apparent that they must double up, and before the fruit was all out many had to pile three plates upon one, and the last to open had to be provided with extra room by closing one entrance and building temporary tables. The entries probably exceeded anything before made at our State Fairs in this department, numbering five hundred and twenty-five.

The center of the hall, with its entire table-room, was devoted to the floral department, H. W. Roby, superintendent. Notwith-

standing the severe frosts, the cut-flowers alone could have covered the entire tables. James Vick, Rochester, N. Y., had a splendid collection, and this department of the hall was a grand success.

To give a full report of the fruit-department would be impossible. A. G. Tuttle's collection of apples was up to his usual standard of excellence, as will be seen by the number of first premiums carried off by him. It would seem that from this and former exhibitions that the Baraboo country had some of the touches yet of the Garden of Eden. An unusually fine display of fruits from Beaver Dam, by Gould's Nursery Company, took a large share of premiums, while G. P. Peffer could have covered one-half the entire tables of the professionals with apples, pears, plums, grapes, etc. E. Wilcox, from the north, showed us clearly that something besides crabs can be raised in that region. He took the "blue" on ten varieties of apples adapted to the northwest. Among professionals, Geo. Wolff, Wm. Finlayson, and Wm. Kitzrow each drew first prizes, and though not large, had some fine collections of fruits. The exhibition of pears was mostly confined to the lake-shore region. A few \$5 specimens of Flemish Beauty were exhibited by A. G. Tuttle, and entitled to the first prize. Messrs. Stickney, Baumbach, and Gilbert made a fine collection of apples, but competed for but few premiums, which they took, as a matter of course.

The display of grapes, by C. H. Greenman, drew their full share of attention, and but for the hard frosts would have taken more first premiums. For show of superintendent's exhibition, see award of premiums.

The non-professionals were out in full costume, and could have filled the entire hall. The competition was so great that it was difficult to decide who was victor, especially so, as many collections were piled up for want of room. A careful reading of the award of premiums will show the general standing of the collections.

Wm. Reid's display of grapes was the finest he ever made of certain varieties, from which a box was packed and forwarded to the American Pomological Society, at Chicago.

The finest collection of pears among non-professionals, was from Dr. James Ozanne, Racine. Messrs. Parks and Thomas were unable to exhibit their fine collections of pears, although Mr. Parks brought a branch heavily laden with fine specimens, a portion of which, and some from Dr. Ozanne's, were immediately forwarded





REVERSE.



OBVERSE.

Wilder Medal, awarded to the Wisconsin State Horticultural Society, "For General Collection of Fruit," exhibited at the American Pomological Exhibition, Chicago, 1875.

to the Chicago exhibition. For names of exhibitors and award of premiums, see report of committees on premiums.

If it is possible at the next State Fair to arrange the smaller entries side by side, it would be very desirable, and the awarding committees will be able to decide without so great a liability to error, and with half the labor.

Winter apples, having attained neither size or color, owing to the earliness of the fair, did not appear well, nor could they be recognized by good judges. Although the apple-crop throughout the State was small, yet the specimens from the interior were fairer than usual, and a good judge wrote me that nowhere east had he seen apple-trees so well loaded as along the lake-shore counties of Wisconsin.

I hope the condition of the treasury will permit our offering the same amount of premiums as two years ago, and to improve the quality of the exhibition, and give us plenty of room, I would recommend that exhibitors be restricted to thirty varieties of apples.

The only drawback the American Pomological Exhibition seemed to have upon us, was to take away many of our best committee-men, whose places it was hard to fill.

POMOLOGICAL EXHIBITION AT CHICAGO.

J. C. PLUMB, MILTON, CHAIRMAN.

The exhibition of fruit from our State at the biennial meeting of this society, at Chicago, the 8th to 11th of September, exceeded the expectation of those most ardent in its accomplishment. (It consisted of over two hundred varieties of named apples, and many varieties unnamed, and seedlings. There were also seventy-seven varieties of Siberians, twenty-six of Pear, only twelve of which were named, and the remainder, native seedlings. There were forty-two varieties of grapes, embracing nearly every desirable, known variety, and two fine-looking native seedlings; also, four varieties of choice plums, and two samples of cranberries, from the wild marshes of Wood county.) The contributions to this show of fruit of our State came from several localities, and in the order named, as follows:

From Jefferson and Rock counties, the largest named collection—some ninety varieties. By A. G. Tuttle, of Sauk, seventy-five varieties; by H. M. Thompson, of Milwaukee, sixty varieties; B. B. Olds, of Clinton, Rock county, fifty-four varieties; J. S. Stickney, of Wauwatosa, fifty-one varieties; G. P. Peffer, of Waukesha county, fifty varieties; D. H. Manning, of La Fayette county, twenty-five varieties; E. Wilcox, of Trempealeau, thirty-one varieties; with other fine collections from William M. Bartholomew, A. A. Boyce, and F. C. Curtis, of Columbia county, and G. J. Kellogg, of Rock county. Mr. Peffer also exhibited a fine collection of pears, with the native seedlings named above, and a beautiful collection of new Siberians.

Mr. Putnam, of Richland county, contributed a remarkably well grown collection of Siberian crabs, of which some thirty-seven varieties were new seedlings. The display of old and new varieties of the Siberian family exceeded any former one from our State, and among them, there seemed everything we could desire for beauty and flavor, for eating, cooking and keeping qualities in this new staple diet of northwestern fruitists.

Notably well grown and fine were the specimen apples from "Baraboo bluffs," by Mr. Tuttle, and from Trempealeau county, by Mr. Wilcox, the latter also showing exceedingly well-grown specimen apple trees. Mr. Thompson, of St. Francis, also showed well-grown samples of several varieties of young evergreens.

The show of grapes was not what it should have been, several of our most successful and able grape-growers failing to contribute. Wm. A. Hitchcock, an amateur grower of Beaver Dam, came to the rescue with forty varieties, remarkably well-grown, embracing nearly all our approved list. A few plates of the choicest varieties from Madison, some well ripened Janesvilles, from C. H. Greenman, of Milton, and Wordens from Kellogg, completed the exhibition of Wisconsin grapes. Had our growers responded as they might have done, our show of this fruit would have exceeded that of any other northern State, in extent and general appearance, though it must have been largely immature from the unusual lateness of the season.

Of apples, varieties were largely duplicated in these several collections, but the aggregate of over two hundred named varieties from our State, this exceptional year, is not only remarkable in

itself, but indicative of the enterprise and perseverance of our fruit-growers. Wisconsin showed by far the largest variety of apples of any of the twenty-four States and Provinces represented; receiving the third Wilder medal for "general display of fruits."

The exhibition, as a whole, was one of the highest interest to the western pomologist; one full of instruction to the student of adaptation of varieties to the varied soils and aspects, latitudes and longitudes of this vast country; and one of fine opportunity to study the nomenclature of the nation.

The usual offices of honor and service in the national society, were granted our State; the first, in a vice-presidency, to G. P. Peffer, and the second, as member of the "general fruit committee," to J. C. Plumb, Milton.

REPORTS OF YIELD OF STRAWBERRIES, SEASON 1875.*

B. F. ADAMS, MADISON.

In compliance with your request I furnish the following statement relating to my strawberry-crop of last season. The varieties cultivated for market were Wilson, for main crop, Downer's Prolific

* These reports were prepared for publication in the Transactions, at the request of the society, at its last meeting. Lest those who are not acquainted with the business, may be led by these remarkably large yields to think that the road to fortune is through strawberry culture, and be induced to invest money therein, which they might use to better advantage in some other enterprise, it will be well to state that the men who raised these large crops are "old hands at the business," they understand, and can take advantage of all the elements of success, from the location of the site of the strawberry patch, to the sale of the last berry of the season; to use a professional term, they can easily "double discount" a common cultivator, both in the yield obtained, and in the profits realized. And further, the last winter, notwithstanding its severity, was a very favorable one for the plants. Soon after the ground had frozen to a moderate depth, a heavy body of snow fell, which remained an unbroken protection to the plants against freezing and thawing until the final break up in the spring; and the cold and wet weather of the season added greatly to the strength and vigor of the plants. The whole season was favorable, and hence, this very exceptional yield was secured. With close care, and good cultivation, on the right kind of soil and location, and a good market, strawberry-culture will usually afford a fair profit to those who understand the business, but let no one embark in it, thinking that it is an easy and sure road to wealth.

and Baltimore Scarlet (early), Charles Downing, Russell, Reed's Late Pine, Jucunda (all late), and Boyden's No. 30. With these varieties, aided by cool moist weather, our strawberry season was extended, in this locality, through a period of forty-five days. On eighty four rods of ground, the Wilson variety yielded one hundred and forty-eight bushels of very large fruit. One-fourth of an acre planted with the other varieties yielded forty bushels, but as I kept only the aggregate account of all, cannot state separately, what each variety produced on this plot. Boyden's No. 30 and Charles Downing, produced the largest strawberries and sold most rapidly in our local market.

The land on which this crop was raised is elevated sixty or seventy feet above Lake Mendota; the Wilson beds sloped southeast, and the others northeast; soil, clay. The ground, broken up only four years ago, was plowed in the autumn of 1874, and again in the spring after spreading thereon twenty load of manure, well decomposed.

The plants were set in rows three feet apart, and fifteen inches in the rows. A horse and cultivator were used to keep down weeds between the rows, and as we hoed the plants, we trained runners along the rows, and picked off all blossoms by hand as they appeared. Later in the season, all weeding and stirring the soil, was done with hoes and by hand-pulling. As the ground commenced freezing, I covered the plants lightly with forest-leaves, and over them, scattered a light covering of wheat-straw, none of which material was removed in the spring. The plants pushed through the covering with wonderful vigor. Means had been provided for wetting the plants, and mulching, to guard against drought, but timely and abundant rains, furnished all needed moisture here last season.

All the varieties I have mentioned, produce fair crops in this vicinity with good culture; but the Wilson is most profitable for us, who raise the fruit to sell, as it bears abundantly every year, will bear transportation to distant markets, and is unsurpassed for canning purposes. Its quality is not quite equal to some others, but thousands relish it heartily. Near the shores of the lakes around Madison are uplands, that are seldom visited by early and late frosts, where this fruit is grown in the greatest perfection; and the time is near at hand, when large quantities will be grown yearly; already some fruit is shipped from here to other points, in this and adjoining States.

PHILIP CHEEK, BARABOO.

From one-tenth of an acre we picked seven hundred and fifty quarts of strawberries in the season of 1875, which sold, the lowest, small Wilson's, for $12\frac{1}{2}$ cents; the highest price for any was 35 cents per quart, for Downing. We will put the average at 15 cents per quart, which would make it \$112.50 for the crop. This would be at the rate of \$1,125 per acre; but the fact is, that after using all a family of six needed, we sold enough to realize \$120 from this piece of ground. This is explained by the fact that only a few bushels of the whole were Wilson's, the rest being Nicanor, Arena, Peak's Emperor, Agriculturalist, Boyden's No. 30, Charles Downing, President Wilder, and Kentucky, which I can always sell in this market for five cents per quart more than Wilson's. It must be borne in mind that this piece of land was not irrigated, or watered in any way, except by the rainfall, and neither was it mulched.

J. M. SMITH, GREEN BAY.

In accordance with the request of the members of the society, I furnish an account of the culture and yield of my strawberry plat for the last season. The soil is a light loam, somewhat sandy, with a yellow, sandy subsoil. It was naturally a fair soil, but for years previous to its coming into my possession, it had been miserably cultivated, and was so much run down, that for two or three years I did not make it pay expenses. Since that time it has paid handsomely. It will be, I believe, ten years next spring since I commenced improving it. Since that time it has been heavily manured and well cultivated every year.

This piece of land contains a little less than one acre, and is divided into four beds of nearly equal size. It is not underdrained, as its surface drainage is about perfect. No water ever stands upon the beds or in the alleys about them.

In May, 1874, it was manured at the rate of about twenty-five, two-horse loads of stable manure per acre; this was plowed in. It was then manured again with fine compost manure, at the rate of twelve to fifteen loads per acre, and harrowed, and then thoroughly raked by hand, with fine, steel-tooth rakes.

This was its condition when it was set with plants. The variety was Wilson's Albany Seedling. The plants were perfectly pure, and in fine condition. They were set in rows, leaving alternate spaces of twenty and twenty-eight inches; the average distance between the rows being twenty-four inches. The plants were set from twelve to fourteen inches apart in the rows. In the wide spaces between the rows early cabbage-plants were set. These came on finely, and gave me a splendid crop of early cabbage in July. The crop was taken off and then the entire ground given to the plants, which by this time had commenced to throw out a good many runners. My intention was to let each plant throw out six runners, and train them in a circle around the parent plant, and let each runner make one new plant and no more, destroying all other runners and all other plants. Owing to the very dry season this plan could be only partially carried out. Some of the plants made but very few runners. Others, that made more, were trained to the vacant spaces left by the weaker ones. Still, when I came to cover them in the fall, there was a fine stand of beautiful plants. They were covered about one inch in depth with pine leaves drawn from the forest. The covering was left on in the spring until all danger of freezing and thawing was past, when it was taken entirely off the ground. The plants appeared as nice and fresh as when they were covered in the fall. As soon as the plants began to start, the land was again manured with fine compost manure, at the rate of about twenty two-horse loads to the acre. They were now in the best order for a large crop.

They had been hoed repeatedly during the previous season, and the land was entirely free from weeds and grass. A short time before we commenced picking, I selected and measured off one-fourth of an acre from what I considered the best part of the plat. The selected portion was a part of two beds that lay side by side, so that in reality it was a single plat with only an alley two feet wide running through it. This plat was picked by itself, and a very careful account kept of each picking.

The result was as follows: June 21, 3 quarts; June 23, 9 quarts; June 27, 122 quarts; June 29, 579 quarts; July 1, 91 quarts; July 2, 631 quarts; July 5, 59 quarts, July 6, 1,006 quarts; July 9, 216 quarts; July 12, 506 quarts; July 14, 241 quarts; July 16, 68 quarts; July 18, 32 quarts; July 23, 8 quarts; total, 3,571 quarts.

This it will be seen is one hundred and eleven bushels and nineteen quarts, or at the rate of four hundred and forty-six and three-eighths bushels per acre.

The account is undoubtedly correct. It was kept by one of my sons, who is the foreman in the garden and who is ready to testify to its correctness at any time. No account is made of those taken by birds, by admiring friends, or of those that rotted on the vines while ripening. Simply the merchantable berries that were actually picked and marketed, and nothing more. In the above estimate of land, the alleys are excluded. If we add the alley through the middle, and then add one-half the alleys around the outside of the beds, it would increase the land to nearly forty-three rods instead of forty, this will reduce the crop to the rate of four hundred and fifteen bushels per acre. There was in this plat of land three-fourths of an acre that was set with the plants. There might have been another quarter of an acre selected, that would have shown nearly as large a yield as is given above. The third quarter had a small bed of Jucundas in it, and they have always yielded poorly with me, and a large share of the balance of that quarter was injured by the white grub; still the yield would, by most growers, have been considered a good one, though it would have fallen much short of either of the other quarters.

I have no doubt but that the yield was increased very materially by artificial watering. To what extent I am unable to say. I can only say that they were watered as often, and as much as I thought necessary. I have often been laughed at, when I have said that four hundred bushels of strawberries, or at that rate, could be grown to the acre. The above is a fair and correct statement as to how it has been done. I believe that it can be done again. And what is still more, I believe that it can be beaten. If my life and health are spared I shall try hard to beat it in the years to come. Whether I shall succeed or not remains to be seen.

REPORTS OF COMMITTEE OF OBSERVATION.

FIRST DISTRICT, H. M. THOMPSON, SAINT FRANCIS, COMMITTEE.

COUNTIES—*Kenosha, Racine, Milwaukee, Ozaukee, and Washington.*—The lands in this district may be stated as consisting of heavy timber, oak openings, and prairie. That which is cultivated may be particularly described as composed of various gradations of clay, sand, gravel, and loam. The hardiness and productiveness of orchards are greatest in the timber and least in the prairie soil. Currants, gooseberries, strawberries, and hardy raspberries flourish in all the different soils in proportion to their richness and the care used in cultivation. Grapes are most successfully grown on lands that have a southerly declination and having ranges of hills, or natural forests, or some artificial barrier to break the force of the winds.

The amount of fruit-tree and small-fruit planting in the past year has been greatly in excess of any former season since the year 1862. The kinds of fruits planted are as follows, given in order, commencing with the largest: Apples, strawberries, raspberries, cherries, grapes, currants, gooseberries, plums, and pears. The loss of last springs planting of fruit trees, in a few localities has been unusually large, but owing to the favorable season the percentage of loss of both fruit-trees and small-fruits in the whole district has been much smaller than in previous years. Without the aid of statutory enactment for the purpose of procuring statistics, it is impossible to give any reliable figures as to the quantity of fruit grown for home use and market. This is especially the case in regard to the apple-crop, the growth of which, is so universally distributed as to place the obtaining of statistics beyond the reach of unaided individual effort.

The most hardy and productive varieties of apple trees in all soils are Sour Bough, Sops of Wine, Red Astrachan, Fall Orange, Lowell, Fall Janet, St. Lawrence, Pumpkin Sweet, Russet, Colvert, Autumn Strawberry, Alexander, Duchess, Fameuse, Golden Russet, Baltimore, Pennocks Red Winter, Westfield Seek-No-Further, Tolman Sweet, Romanite, Grey Vandevere.

The Ben Davis, so far, has proved as hardy as many of the other varieties, and promises to fruit at an early age. The Northern Spy succeeds best in the timber counties, but is objectionable, because it is late in coming into bearing. The Domine is prized on account of its early fruiting, being an annual bearer; very productive; fair size; good color and keeping qualities. Its hardiness has not been sufficiently tested, to warrant general planting. The Yellow, Newtown Pippin is rather tender, but when planted in rich, sandy soils, is productive and profitable. Perry Russet is only productive and profitable, when planted in light, warm, sandy soils. In markets where the quality of the fruit is known, it sells fifty cents per barrel higher, than any other variety of Russet.

It is estimated that over one thousand varieties of apple trees, have been tested in this district, since 1836, and that over nine-tenths of these varieties, are of no value to the commercial, and general fruit-tree planter.

An approximate estimate of the number of acres of strawberries and raspberries, and the product of marketed fruit, is one hundred and fifty acres in cultivation, with an average yield of ninety bushels per acre, makes a total of thirteen thousand five hundred bushels of fruit sent to market. The sales average \$4.48 per bushel. The quantity grown for home consumption may be safely estimated to be equal to the quantity marketed. The principal variety of strawberries grown for market is the Wilson; of raspberries, Doolittle, Miami, Davison's Thornless, and Philadelphia. All these varieties have been planted in various soils with good results, proving hardy, productive, and profitable. The Davison's Thornless does not come into full bearing as soon as some other kinds of the black caps, but is considered especially valuable on account of its ripening a week to ten days earlier than other varieties, and the ability of the canes to withstand the force of the winds and a heavy weight of snow. The Kentish cherry failed to produce a crop for the first time in thirty years. Apples have been almost wholly exempt from ravages of the codling moth. Pear and apple-trees were remarkably free from blight. The effects of the severe cold of the winter of 1874-75, were mostly confined to the roots of young trees, growing on elevated lands and on sandy soils, and mainly to such varieties as made a late and immature growth. The injury to bearing trees was not as severe as in younger trees, the

roots being only partially injured. In some cases the bodies were affected by bark bursting.

In most instances bearing trees which had been mulched, trees adjacent to natural forests, and the few orchards which were wholly or partially enclosed with timber belts, have suffered the least injury. One of orchards thus protected, was that of Mr. Samuel R. Bones, of Racine county, who says: "I have summer-fallowed my orchard for several years up to the middle of July, then putting in some crop to lie on the ground for mulch. The orchard that had millet on last year, did not lose a tree, and they were heavily loaded with fruit this season. We have nine acres of orchard, and have summer-fallowed it by plowing twice or three times, and dragging it six or eight times a year, for the last six years. The last three, have sown some crop for mulch at the last harrowing. Yield for the year 1873, 672 barrels; 1874, 270 barrels, or nearly as much as the rest of the county, it being the off year; 1875, 520 barrels. And the orchards of J. C. Howard, of the same county, one of them having the natural forest upon the west side, and the other one, having a forest growth upon the east, north and west. Many instances might be cited showing that trees are more uniformly healthy, longer lived, and more productive in the timber counties than in unprotected orchards in the prairie counties. The last season's apple crop in the timber country was more than one-half as large as the average of bearing years, while in most of the exposed orchards in the prairie country, the fruit-trees were not only more injured, but produced a very light crop.

In regard to orchard protection, Dr. E. G. Mygatt, of Kenosha county, in a letter dated December 15, says: "It would pay you to see the protection to my orchard during the past seventeen years. Only one tree has died behind my wind-break, out of one hundred and twenty trees, now about twenty years old, and some of them of the tender kinds."

The accompanying meteorological report, as made up from the records for Milwaukee station, by L. W. Rhode, signal-service, for six months, from November, 1874, to April, 1875, inclusive, contains some important facts as to the extremes of winter temperature, etc. The collection of similar tables from different portions of the State would seem to be of the utmost importance, for the purpose of ascertaining the natural causes which have tended to produce

injury, thereby rendering the pursuit of horticulture less experimental, and less liable to failure.

Summary of observations taken at Milwaukee.

MONTHS.	Barometer.	Thermom.	Direct'n of wind.	Rainfall, in.	Highest barometer.	Date.	Lowest barometer.	Date.	Highest temperature.	Date.	Lowest temperature.	Date.
November, 1874	30.075	35.50	NW.	2.64	30.665	18	29.032	22	70	7	— 1	30
December, 1874.	30.142	25.40	NW.	1.00	30.885	31	29.560	2	54	2	—11	29
January, 1875...	30.254	10.41	NW.	1.24	30.709	17	29.722	29	36	27	—25	9
February, 1875..	30.132	8.36	W.	1.82	30.795	6	29.382	3	35	2	—22	12
March, 1875....	30.023	25.97	SE.	2.93	30.494	18	29.021	15	66	31	zero.	17
April, 1875.....	29.994	33.04	NE.	3.13	30.424	21	29.302	15	74	6	12	16

Highest velocity of wind—November 23, 1874, 44; December 18, 1874, 35; January 1, 1875, 36; February 3, 1875, 144; March 15, 1875, 52; April 15, 1875, 51.

SECOND DISTRICT—J. C. PLUMB, MILTON, COMMITTEE.

COUNTIES—Walworth, Rock, Green, Dane, La Fayette, Iowa, and Grant.—This district embraces the entire southern tier of counties except that of Kenosha, on the lake, and with Dane and Grant, comprise the oldest and most developed agricultural and mineral districts in the State. Its superficial geology is almost a unit, and having no large body of water to modify its climate, the experience of fruit-growers is about the same in all portions of the district. The exceptions to these general statements are found in the different conditions of soil and subsoil found on prairie, opening, and timber, in valleys and on high lands, and on the local influence of rivers and small lakes. We shall also have occasion to note the results of planting on high, bleak, cool localities compared with the low, rich lands, or warm, sheltered localities. Wishing mainly to let our correspondents give testimony, we quote short abstracts from their communications. Commencing with Walworth county, my informant, J. L. Tubbs, Esq., says: "About five-sixths of the area was originally wooded lands—mostly oak-openings, balance prairie, rather rolling. The wood lands, best for fruit-growing; the most successful on high ground, between the water-courses. Of varieties of apple, the Astrac'hian takes the lead for early; Red June, scabs; Sweet June, fine; Duchess also, but seems especially subject to attack of curculio. Autumn Strawberry, Bailey Sweet, Fameuse, and Fall Orange all doing well; Rawle's Janet the most profitable

winter apple; Northern Spy, Seek-no-Further, Willard, all valuable; Tolman Sweets, enough for all. Flemish Beauty is *the* pear; Early Richmond and Late Richmond cherries are grown more than all others, and yield fine crops; of strawberries, '*Wilson, forever.*'"

Rock county reports about equally divided between prairie and timber, with much the same experience with varieties as Walworth county. The most promising orchards, on the oak lands, and on elevated, airy location; the northern slope showing best condition, and most free from trouble of all kinds. All the ridges lying high enough for the lime-stone formation are especially successful. N. N. Palmer, of Western Rock, says of an orchard planted in 1851, on steep northwestern slope, gravel soil, root killed spring of 1873, while his own on very high ground but in better soil and in grass escaped injury: Several good orchards ruined by the canker-worm; cleaned his out with Paris-green sprinkled on in solution.

L. Rote, Esq., of Monroe, Green county, says: The soil in this county is mainly composed of decomposed magnesian limestone, which is the surface rock over nearly all its area. The highest lands, which are the divide between Sugar river and the waters which run west to the Pecatonica, are about three hundred feet above Rock river, and run across the county from the southeast corner to near the northwest corner. Upon these highlands I find the thriftiest orchards, and also the most fruitful. I also find that many varieties that are in lower situations tender, do well here. There are also some other elevated places extending east and west from this water-shed, that have thrifty orchards. Old orchards, especially on the prairies, have been destroyed during the last eight years by the canker worm, and they are now making raids upon the orchards generally, so much so that the people have become almost totally discouraged about planting again. I believe that if people would plant good wind brakes of evergreens and young orchards on the high lands, in twenty years, this county would have apples to export, but so long as they plant in low places and in black soil, they will meet with utter failure; even the hardest varieties will perish, and shelter will be of little use.

Another correspondent says, the "most successful orchards are on medium elevations, deep, dark soil, where the clay sub-soil is well below the surface. The most favorable aspect is northwest.

The southern slopes, giving too early flow of sap in spring, and late growth in fall;" varieties about the same as others recommended.

Joel Barber, of Lancaster, Grant county, says: Orchards in the sandy valleys and declivities have generally been failures. The same may be said of warm, alluvial bottoms, except the great bottoms along the Wisconsin and Mississippi. At Boscobel, which is upon the Wisconsin bottom, the results of fruit-culture have been very encouraging. In all the regions mentioned thus far, the Siberians and most small-fruits are entirely successful, as elsewhere, I now come to the upland, which is the real orchard ground of this county. A considerable portion of our upland is prairie, with a rich, black soil, with clay subsoil. The rest is a lighter soil covered originally with timber and openings. The timber land is considered the best for orchards, and wherever people have used due care in the planting and cultivation of orchards, their disappointments have been few. Newness of land, I am satisfied, is one of the greatest natural obstacles. Winter-killing can be ascribed to no other fault in some cases. The same principle applies with more force to prairie soils. I am satisfied that old, worn-out fields, with some manure are most favorable to the production of sound wood and durable trees. It must be borne in mind that cultivation of the soil is one of the first conditions of success. Localities sloping to the south are sometimes quite successful, but those lying near the highest land and sloping to the north or east are generally more reliable and much more fruitful.

Mr. Ellwood, of Dodgeville, Iowa county, says: The most successful orchards are in the timber, and recommends the hardy list of apples right through.

Wm. Finlayson, of western Dane county, says their "bluffs are full of limestone, and all the hardy fruits do well on them. All the small-fruits do well in the valleys. The most successful orchards are on the hill-tops, and timber land preferred to prairie." All of these correspondents speak favorably of the small-fruit culture as successful when properly attended to, and of grape-culture, in particular, as very satisfactory.

THIRD DISTRICT—E. H. BENTON, LE ROY, COMMITTEE.

COUNTIES—*Jefferson, Dodge, Calumet, and Fond du Lac.*—The

amount of tree-planting as compared with former years, is about 50 per cent; mostly to fill up vacancies; but very few new orchards have been set. The extensive losses (in some cases being as high as 90 per cent), have discouraged some entirely, and quite destroyed their faith in the possibility of growing apples. The interest or desire to grow fruit, especially apples, is very great, and the effort put forth and the amount of money expended, is very commendable to our citizens.

The amount of fruit grown; of apples, the least ever known; of grapes, the greatest, but early frosts very nearly destroyed them; of small-fruits, a good yield, of good quality, was realized.

Have observed but little blight this season. It seems the most prevalent in shady or confined localities, where there is a rank growth. The Transcendant Crab seems the most subject to it of all varieties, except the pear.

The winter-killing of last winter, was mostly the result of previous untoward influences, such as dry, hot winds, scorching sun, soil dry to great depth, and severe freezing, and unreasonable and unseasonable pruning.

There has been but little difference in varieties, in ability to withstand the severe, climatic conditions existing during the last three years. All varieties of the apple have been killed on the same ground, where previously there was a manifest difference in varieties; those designated as the five hardiest on the society's list doing the best. The Fameuse is largely planted, and is not excelled in hardiness and fruitfulness, except by the Duchess, which is growing in favor almost everywhere. The Seek-no-Further is doing well as a local variety, on high, dry localities in timber lands.

Prairie lands, as a rule, present the most unfavorable conditions for the large fruits, and those intending to set trees in such soils should exercise extreme caution in selecting their trees. Perhaps there is no one thing so preventive of injury to our fruit-trees as mulching: it is very effective, both against drought and root-killing by severe, sudden freezing. Where the orchard is cleanly cultivated, mulching is indispensable during the winter. Another rule, or fact is, that a gravelly subsoil is favorable to the health of fruit-trees; and the gravel knolls which occur in so many sections of our State, are the very best locations for fruit-growing.

Pears and grafted plums may truly be considered a luxury,

grown in this State. With most, apples cost, including first investment, all they will sell for when grown, and I do not look on apple-growing as a source of profit to the average farmer; only those having first-class localities and some adaptedness to the business need expect a profit from it.

FOURTH DISTRICT—S. B. LOOMIS, LONE ROCK, COMMITTEE.

COUNTIES—Sauk, Richland, Crawford, and Vernon.—Your committee, from the Fourth District, has not been able to give the critical observation, the carefulness of detail, which horticultural inquiry demands. By correspondence, conversation, and limited personal observation, we have been made more hopeful for the future of fruit-growing, than ever before. We have found certain varieties that have survived the winter of '75, apparently vigorous, showing not a scar from the keen lances of the North, nor any failing from the simoon of the South, which sometimes visits us. Such varieties are few, but they do exist, and in sufficient numbers to ground a hope upon. The location for these varieties in this district, thrown as it is into all possible shapes, and then cut up afterwards by the streams which issue from the head and sides of numberless ravines, is upon the hills or bluffs. Between the standard apples and the valleys, especially if sandy, there is an irreconcilable incompatibility; in my own case, they went out with the winter of 1875; Duchess of Oldenburg, Tetofsky, Fameuse, Walbridge—with the Soulard Crab, Hyslop, and other varieties, leaving only and alone in its glory, the Transcendent, and it is a glory every where. On the hills, in locations inclining to the east and southeast, with a clay or gravelly clay soil, underdrained naturally, or otherwise, it will be safe to plant the Duchess, Tetofsky, Haas, Golden Russet, Tolman Sweet, Fameuse, Walbridge, and Pewaukee, and some others, with the prospect of realizing from the venture.

Wisconsin is not alone in difficulties and will not be behind in overcoming them, and, I believe, will have as few as any State when the situation is understood. We may as well say here as elsewhere, observation convinces that everybody is not constituted by nature, and cannot be made by culture, or grace, fit to plant, prune, and care for the delicate fruits of the garden and orchard, but Provi-

dence has supplied a sufficient number, and to that number there is a Divine call to improve all the means to so desirable an end.

It is believed that there will be more trees planted in the spring of 1876, than in any one year before, since 1873, but the Siberians will take the lead in numbers. There is a steady, but not rapid, increase of small-fruit culture for home consumption.

FIFTH DISTRICT—E. W. DANIELS, AURORAVILLE, COMMITTEE.

COUNTIES—Green Lake, Waushara, Marquette, and Winnebago.
—The amount of trees planted this season, compared with other seasons is about one-half; those planted last spring, lived about the same as in former years, but those dug and well heeled in in the fall, much better, as our season was not so dry last year as the three previous ones. The degree of interest felt in fruit raising, is here, the same as in the State at large; very little.

Our society know that this State has been nearly a failure in apple-culture during the past year, and particularly the west half of this fifth-district, which has a preponderance of light sandy soil, which is not congenial to the growth of our large apples, but is adapted to most kinds of small-fruits. For want of large markets, small-fruits are not much cultivated except for home use.

In this vicinity, the Duchess crop was as much as all other kinds together, and that was about half as much as usual; say two bushels to a tree, or two hundred bushels within the radius of a mile. The amount of blight the past season was vastly less than for years before. The effect of last winter on trees was anything but uniform. In many orchards the killing was general, of nearly every variety, while in other orchards near by, all, or nearly all, are living. One fact is significant, that trees in an orchard having an inclination to the east or south, outlived the winter with hardly an exception in this locality, and some fruited the past summer. Those orchards inclining to the north and west, killed wonderfully; more of the oldest trees dying than younger ones; the Golden Russet especially, being the oldest trees in this county, and Green Lake; from eighteen to twenty-two years old. The elevated orchards in Green Lake county are killed less than those on low ground, but next to none escaped entirely.)

The Siberian apples are of no little importance in this district, and north; they are coming more into general use every year; last year, more than ever promoted their popularity. The Transcendent now takes the lead. It is a voracious feeder, thrives on any sand-bank, and is splendid for drying.

Pears, with but one exception, were nearly all killed last winter. My neighbor, A. W. Davanport, had, and still has, twenty Flemish Beauties. Tame plums mostly succumbed to the same fate, but the semi-wild, such as Hinckley, bore plentifully last summer, but only colored, and did not ripen. (The Winnebago is the best of this class of plums to eat. It has a soft pulp and a spicy taste, but is not as good as the Hinckley to cook.

I have for the last three years tried G. N. Smith's curculio remedy, and found it sure for the "Little Turks," and sometimes to the foliage. I use about one part Paris Green to thirty-nine parts flour, buckwheat flour being the best. I mix it well together and put into double mosquito-netting, I then tie it to a pole and shake it over the tree, in a still time, taking care to stand where it will not come in my eyes. I put it on first, about the time the blossoms fall, and twice more, after intervals of five or six days each.

My grapes were laid down in earth, as they always are, in the winter, and made a good growth and bore plentifully the past summer, but only the Janesville and Eumelan got tully ripe, although the August frost did not touch them.

In my nursery, last winter, the Northern Spy killed most. Fall Wine next. White Bellflower next. Sweet Pear, wood yellowed, but they mostly lived. Tetofsky killed at their terminals, but made a good growth afterwards. Astrachan, Ben Davis, Westfield Seek-no-Further, and Bailey Sweet did the same. Duchess, Pewaukee, Haas, Fall Orange, my Northwestern Greening, Fameuse, Tolman Sweet, Utter, St. Lawrence, and Walbridge were not damaged to any extent.

SEVENTH DISTRICT—D. HUNTLEY, APPLETON, COMMITTEE.

COUNTIES—Outagamie, Shawano, and Waupaca.—The amount of tree-planting in this district, as compared with other years, is much less, probably not more than one-tenth; but very few trees, except the crabs, were set. I will name them in their order as to

hardiness, and about the same order as to amount set. Duchess, Red Astrachan, Fameuse and Golden Russet. In this immediate vicinity, the Golden Russet did nearly as well as the Duchess of Oldenburgh; but in some parts of the county, did not stand the hard winters of 1872-3 and 1874-5; so many trees were killed outright in each of these winters, that there is great discouragement about setting any trees at all, but there are a very few who say they will keep trying, but will set only three or four kinds, the crabs, especially the Transcendent, and the Duchess. Those who have had any experience with the Tetofsky, say it is as hardy as the Duchess but only a few have set them. A great many Tolman Sweets have been killed; some are left, a few still healthy. The trees set in the spring of 1875 have been quite successful, the season being cool and damp.

There had been a good degree of interest in this county in fruit-raising till those hard winters killed so many trees. Nearly every pear tree in the county has given up the ghost. Plums suffered but little less; cherries also, yet more are living than of pears or plums. There has been much more attention paid to small-fruit culture, since the destruction of our larger fruit trees, than before; it is confined principally to strawberries, raspberries, and currants. Of strawberries, the Wilson stands first; more are cultivated than of all others. Of raspberries, the Doolittle, Mammoth Cluster, or Miama are the principal ones cultivated. Quite a number are cultivating the grape, in very limited quantities, setting two or three varieties; Concord, Delaware, Iowa, and some others.

Very little is being done in ornamental tree-planting; there is no concert of action, and the law in regard to setting by the highways or cultivating in quantity, has had no perceptible influence. Fruit trees protected on the north and west by timber or high ridges have not suffered as much as other exposures. An incline to the north has proved in some instances better for fruit, but trees seem to kill about the same as in other locations.

There is a general feeling of discouragement except in the culture of small-fruits. Many small nurseries will discontinue growing apple, pear, and plum trees. The crabs seem proof against almost any amount of cold. Grapes, when laid down and protected or covered, do well on any soils and in nearly all locations. Some have thought we were in a nice fruit-district, but many are thinking differently now. We want more light.

NINTH DISTRICT—E. WILCOX, TREMPEALEAU, COMMITTEE.

COUNTIES—*La Crosse, Trempealeau, Jackson, and Buffalo, with the valleys of the St. Croix and Chippewa.*—The oldest apple-trees in our country had been planted, say, fifteen or eighteen years, when they were mostly killed in the winter of 1872 and 1873. Many of these trees had given such promise of life and fruitfulness that orchards were being generally planted. Many had been put out quite recently. These younger trees suffered less than those which had been in bearing for years; in fact some orchards, the trees of which were only from one to three years planted, came through that winter with but little loss, not near as much as those of the same age in the nursery. One reason for this, no doubt, was, the earth had been so recently moved to set the tree, that the slight rain, late in the fall, had saturated the soil with moisture, while the soil in our nursery and orchard was very dry. While all kinds failed, it must be admitted that some stood it better than others, and if the early planters had known what we now know, they would be a good deal better off than they are.

For illustration, in my orchard, I had a few each of Keswick Codlin, Autumn Strawberry, Bailey's Sweet, Northern Spy, Lady Finger, Yellow Bellflower, Rawle's Janet, Ben Davis, Minkler, Red Romanite, Fall Stripe, Drap De Or, Pomme Grise, Jonathan, Wagner, Domine, Perry Russet, Golden Russet. No more of any of these in mine. I had about forty Utters, half are left; fifty Fameuse, twenty survive; twenty-five Plumb's Cider, twenty good trees, these stood better than any other except Duchess, which came out about the same; also Red Astrachan. Now out of all the above, I have got about one hundred very fair trees, and although they are but a small part of what I once had in my orchard, still when I reflect that they are of bearing age, taking President's Tuttle's estimate of their value, I am considerably set up. When I look over those Transcendents, set out to fill up where trees have died, budded with hardy standards, with a prospect of bearing fruit another year, though only two to four years from the bud, I think, perhaps I will not accept brother Smith's advice, and leave this country for Baraboo, or some other more favored region, but will pick the flint, and fight it out here, the rest of my life. The prospects for fruit here another year are good, wherever we have the trees left, old enough to bear.

The following notes taken from correspondence with successful orchardists in this district may present some facts of interest:

Mr. S. S. Luce, of Galesville, writes: "My orchard, consisting of 425 trees, varying in age from three to ten years, is in the pocket of a side-hill, fifty to one hundred feet above the table-land, and almost one hundred and fifty feet above the Mississippi at Trempealeau. It has an inclination to the east, is protected on the north, west, and south by hills surmounted by groves of oak and hickory. The soil is a deep, vegetable mold, on a clayey subsoil. I transplanted the first hundred trees in 1866, and cultivated the ground for six successive years. The first crop of apples was five years after, when I raised seventy-five bushels, mostly the Duchess of Oldenburg and Price's Sweet. My orchard was injured to some extent by the winter of 1873, but bore a fine crop the following summer; the best bearing trees producing from one to six barrels each. I had three hundred bushels of apples on three-fourths of an acre of ground. The losses from the severe winters of 1873 and 1874 will be about twenty-five per cent., and to those less than eight years old, almost nothing.

My trees have proved hardy in the order named, commencing with the most hardy: Duchess of Oldenburg, Red Astrachan, Plumb's Cider, Utter, Fameuse, Price's Sweet, Fall Stripe, Golden Russet, etc. I have never found it difficult to conduct an orchard up to eight years, even over frozen mercury, but after that age, thirty degrees below zero seems to be about all the hardest varieties can safely stand in the most favorable locations.

Mr. S. M. Davis of Jackson county, gives his observations in that county as follows: "Less tree planting, success, poor, almost a total failure, and hence, not much interest felt in fruit-raising. But few apples, except the crabs and Hybrids are raised. Some bear every year and stand the climate well. Small-fruits, on the increase and do well. There is more attention paid to the cultivation of ornamental trees, all on clay subsoil are doing well. Balsams begin to decay in twelve or fifteen years on light sandy soil. All of the small-fruits except grapes, will stand our climate on any soil. The tender varieties of grapes "winter kill," Concord, Delaware, Clinton, and Hartford, will stand by covering. Fire Blight showed itself on the hottest days, on the rapid growing trees of the hardest varieties.

ELEVENTH DISTRICT—SAMUEL ROUNSEVILLE, SHEBOYGAN FALLS,
COMMITTEE.

COUNTIES—Sheboygan, Calumet, and Manitowoc.—There were less than the usual number of trees planted in this district during the past season, but the setting was generally more carefully done; the weather was favorable and I think the full usual quantity of a year's planting are standing in good condition. There is an increasing degree of interest taken in fruit-culture. The tree planters have been meditating, upon and enquiring into the causes of their successes and their failures, and are fast learning what varieties to select, and where to plant them. The crop of apples was light. In my own little orchard, and I think it is much the same throughout these three counties, the Duchess and Golden Russet did best. The fruit of these two varieties was larger and better flavored than usual, and the quantity, particularly of the Duchess, was satisfactory. The Red Astrachan which usually grows here large and fair, this season was deficient in size, flavor and color and deeply sutured like the old red tomato. The apple moth and curculio did but little injury.

There is considerable quantity of small-fruits grown, mostly by individual families for their own use. There are four or five parties in this county who are growing strawberries and raspberries, to some extent, for the market. As near as I can ascertain, about three hundred bushels of strawberries and one hundred bushels of raspberries have been marketed. The Wilson strawberry, and the Thornless raspberry, seem to be the favorite varieties.

There was but little blight in this vicinity. The most luxuriant growing varieties seem most liable to it. The attack commences upon the richest places in the field, and in moist, warm weather, when the trees are making the most rapid growth. With us, the Transcendent has been injured more in the nursery than any other variety, pears not excepted. In the orchard, pears have suffered most. I am inclined to believe, that when the horticultural chemist shall have traced this disease to its source, it will be found to be in voracious and voluptuous feeding.

The apple trees were but slightly injured by the severe cold of last winter. The snow fell early, became deep, and continued, with us, until late in the season; this saved them.

But few bearing plum trees were injured, but the young, thrifty-growing nursery stock was badly stricken in the tops. The same may be said of pears, if we make the single exception of the Flemish Beauty. I saw no trees of this variety that were injured by the excessive cold weather.

There has been but little effort made in ornamental or timber planting of trees. The years are few since this whole section was densely covered with a natural growth of timber. The old settlers are yet resting from the exhaustive labor involved in making farms in a wilderness of trees. They already see their mistake in the wholesale destruction of the timber, and will soon begin to plant trees for shelter and timber.

In regard to natural advantages or disadvantages of different localities in soil, exposure, protection, local peculiarities, etc., the best fruit-belt of the State consists of the timbered, lake-shore counties, lying between Racine and Green Bay; portions of the more northern counties are the best of all.

The weather during the past year has been unusual, and this has had a corresponding effect upon vegetation, in the growth of different kinds of trees; in lessening the extent of the blight; in checking the ravages of the apple-moth and the curculio, and in the perceptible variation of some varieties of fruit from their common habit. In this, nature has given us some hints for our consideration and improvement.

TWELFTH DISTRICT—J. M. SMITH, GREEN BAY, COMMITTEE.

COUNTIES—Brown, Kewaunee, Door, and Oconto.—As a member of this committee, I confess that I do not know what to say. To report failure in greater or less degree in every direction, is not pleasant, yet I do not know of a single orchard in my vicinity, but has been injured, more or less. Some that have been well cared for are sadly injured.

A friend of mine has an orchard which is well located, and has been carefully cultivated since the trees were set, fifteen to eighteen years ago. The trees made a splendid growth, and seemed to be but little affected by either summer or winter, until last winter. Last spring they showed signs of being badly injured. During the

summer they kept dying; until to-day, there is scarcely a living tree left. All varieties seem to have fared alike. Another and a larger one, situated south of Green Bay, upon a ridge sloping to the east, had been set nearly thirty-four years, all the varieties in it but one, had been more or less injured previous to last winter. There were seven Fameuse trees, that had been bearing, continually increasing crops each year, for sixteen years, until the summer of '74, when the crop was one hundred and fifty bushels. Their owner was of course delighted. He thought he had at least one variety that could truly be called *iron-clad*. Last spring he came to me utterly disheartened and discouraged; "his last hope, his Fameuse were all dead." His fears were worse than the reality. They came out quite late in the spring, gradually improving in appearance during the summer. In the fall they yielded about fifty bushels of fruit. Whether they will entirely recover or not, remains to be seen.

About five miles further south is another old orchard on elevated ground, with a southeastern aspect. The oldest bearing trees were the Tolman Sweet; some of them, about twelve inches in diameter, had been in bearing nearly twenty-five years. Last winter killed, I believe, every one of them. His whole orchard is badly injured. His Fameuse were hardly in full bearing, they having been set only a few years. Here let me say that my observation satisfies me that the Fameuse is a more hardy tree and less liable to be injured after it gets fairly into bearing, than before. These two last mentioned orchards are, I believe, the oldest in this part of the State. They have been well cared for; yet the results have been, to say the least, discouraging. It must be evident that we have not yet found the true *Iron-Clads* for this state. The Fameuse is, all things considered, the safest tree to set in this portion of the State. The results have been so discouraging that but very few trees have been or will be set for a short time to come.

If I were to choose to-day between apple- and pear-culture in this district, I should be very apt to choose the latter. The little pear orchard of which I have repeatedly spoken at these meetings, stood the test of last winter. If my memory is correct, none of them died from the effects of the winter, though two or three were killed with the blight. There are to-day about forty of the original forty-five trees standing. It is now ten years, since they have been touched,

except to gather the annual crop. About half the trees are dwarfs. They show signs of age, and will probably never bear much more. In the year of 1874, the crop was simply immense. Last season about one-fourth of them bore a crop of fruit, some of them full, others only a partial crop. Some of the standards have passed their best days, though most of them give not the least indications of anything but being profitable for many years to come.

In small-fruits, the last year has been more successful. Grapevines came through the winter in good condition, and set very full of fruit. Owing to the season being so unusually wet and cold, they did not ripen as well as common, and hence the quality was not equal to former years. This branch of fruit-growing continues to be a decided success.

I do not know of a single instance, where our Northern varieties have been set in a suitable location and properly cared for, that has been a failure. I am firmly of the opinion, and I think the fairs of the Northwestern Agricultural Society have demonstrated the fact, that the finest grapes now grown in this State, are those grown in the Fox River valley.

In blackberries, there is little or nothing doing for two reasons. First, we have no varieties that will endure our winters without being protected, and the wild ones are generally so plenty and cheap that it would not pay to cultivate them.

The raspberry-crop last year was a fair one. The Doolittle and Miami being the leading varieties for market. The Philadelphia, although an immense bearer, is too soft to bear transportation.

The strawberry-crop of last season was probably the largest ever grown in the State. Many growers who were not thoroughly posted in marketing, found their crop an unprofitable one, even though it was a large one. The Wilson is still the leading variety, and has, in fact, about driven everything else out of the market. We very much need some new varieties of this fruit that will lengthen the season.

Gentlemen, I have thus briefly run over the list and given you the situation as it appears to me. There is plenty of work to be done. Improvements needed in every department. Here is plenty of work for the future. Let us each strive to do our best in our respective situations, and though we may not accomplish all that we desire and hope for, still it must not be said of us, when we are gone, that we have lived entirely in vain.

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